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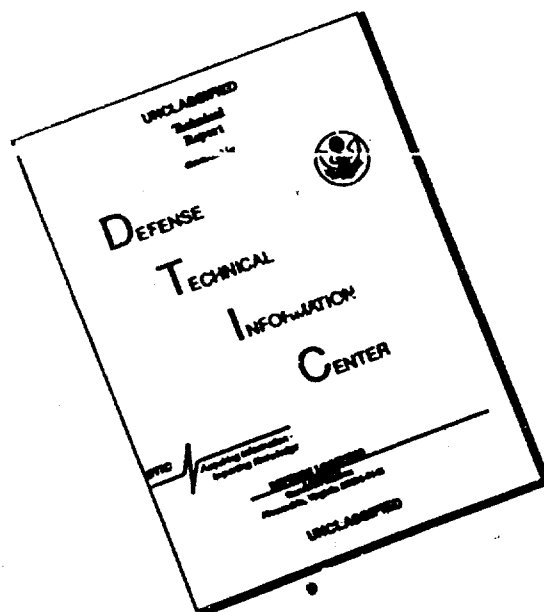
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Conference Summary

SERGEI KORTUNOV

Department of Export Control & Conversion of Military Technologies
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This symposium had an unusual character. Its occurrence would have been unthinkable only a year ago, when the new partnership stage in political relations between Russia and the United States was formally announced.

The presentations of the speakers, both on the Russian and American sides, were made in a nonconfrontational spirit and with the utmost openness. In this manner, the most urgent and delicate questions of national security were discussed: military doctrine, military-technical policy, the process of decisionmaking in the sphere of weapons procurement, the problem of deterrence, strategic stability and ballistic missile defense (BMD).

Military Doctrine

A point of concurrence among Russian and American participants in the discussion of military doctrine was that both sides are not discussing existing military doctrines, but ones that are being developed for post-Cold War conditions. Both sides declared that the only foundation for military doctrines is a precisely readjusted concept of national security, which is currently in the process of formulation in both countries.

Both sides recognized that the emerging military doctrines will exercise great influence on the Russian and U.S. military-industrial complexes military-technical policy and the process of conversion.

Speaking on this issue, *General Viktor Mironov* noted that Russia is currently a new country in comparison with the USSR, although it is now the successor-state. This country did not exist earlier in economic, military, political, or even geographic terms. This explains the protracted character of the process of formulating Russian military doctrine. At the same time, such a doctrine, according to Mironov, has been prepared by the Ministry of Defense and will very shortly be approved by the Russian Federation President. This doctrine is based on a recognition of the fact that if, in bilateral Russian-American relations, the role of military force in recent times has declined, then its role is growing on the world's "periphery." In the words of General Mironov, Russian military doctrine is based on the following political priorities for national security:

- stability and security of the entire world;
- stability and security of the CIS;
- creation of a situation in which external threats can be lessened to the level of "potential risks;"
- the absence of adversaries and enemies;

- complete elimination of war from the life of mankind;
- the absence of the need for defense of external national interests through military means;
- stable and safe development of Russia itself as a federative state;
- demilitarization of the state, society and social consciousness;
- democratic development of Russia on the basis of its political and economic integration into the world community and recognition of the primacy of personal rights in all areas of state activity.

The most important priority of Russian policy, including the military, is nonproliferation of weapons of mass destruction (WMD) and their delivery means, and also restricting the proliferation of conventional weapons.

In the words of General Mironov, the world is on the threshold of a new surge in the proliferation of weapons of all types. In this connection, Mironov drew the attention of the symposium participants to the following areas of potential bilateral U.S.-Russian cooperation: nonproliferation, limitation of the weapons trade, control over the export of dual-use materials and technologies, the struggle against terrorism, ensuring the security of sea lines of communication, protecting the transportation of strategically important resources, and the countering of the "narco-mafia."

General Mironov paid special attention to prospects for cooperation between the two countries in the area of settling conflicts and crisis situations, in particular, on proposed Russian cooperation in this context of the Russian Federation and U.S. navies.

Following him, *Academician E.A. Fedosov* mentioned such basic provisions of the emerging military doctrine, and discussed:

- its defensive character (the mobile fire groups, first strike echelons, and "tank fists" have disappeared from the Russian Armed Forces);
- how it is focused on air mobility, nuclear deterrence at an operational-tactical level, and transition to a corps and brigade structure of the Armed Forces;
- how it is oriented at resolving tasks connected with peacekeeping operations; transitioning to a professional army, supporting high technology in military-technical policy; developing highly accurate weapons, including a system of command, communications and intelligence, and space systems as an element of air-space-ground operations; and undertaking a relative decrease in the role of heavy armaments.

Academician Fedosov mentioned the program, devised by the Russian government, for the development of armaments to the year 2000. On this point, he noted that after the disintegration of the USSR, 85% of the scientific potential of the defense complex supporting RDT&E remained in Russia. Russia also retains 75% of the industrial capacities of the former Soviet defense complex. However, the development and creation of new weapons is unthinkable without the cooperation of other CIS countries as long as part of the infrastructure remains outside the boundaries of Russia.

Among other main reasons for the difficult situation in the defense complex, Fedosov identified the economic crisis, and also the clumsy actions on the part of the government in the areas of taxation and privatization.

Academician Fedosov demonstrated the principles of the emerging military-technical policy through the example of aviation. In the years of the Cold War the aviation industry of the USSR was required to implement such principles as mass production and narrow specialization. Now that the military doctrines of the USSR and U.S. no longer proceed

from the inevitability of large-scale armed conflict between NATO and the WTO, contemporary aircraft construction is faced with different requirements. In particular, contemporary aircraft are required to satisfy such principles as high effectiveness and multi-purpose uses. This, in turn, leads to increased complexity of technology, an increase in science-intensiveness, and higher costs. This causes a sharp decrease in the ability of the aviation industry to produce aircraft on a mass scale.

Given that one of the fundamental elements of the emerging military doctrine is air mobility, the role of aviation in operational planning will increase significantly. Along with this, the percentage of support aircraft in the total aircraft fleet will increase.

Fedosov discussed main types of aircraft, which are necessary for contemporary combat operations. He also noted the objective trend toward the merger of the military and civilian aviation sectors in the defense industry. According to Fedosov, Russia "is fated" to be a great aviation power. Special attention was paid by Fedosov to the conversion of the combat aviation industry, illustrating this with an example of a project for the improvement of air traffic control.

Military-Technical Policy

Colonel General Vyacheslav Mironov spoke about the programming and objectives of planning military policy. In this discussion, he drew attention to the fact that the very character and content of planning for weapons development have changed dramatically. It has become:

- long-term, covering no less than a 10–15 year period;
- objective-oriented, directed at the most complete satisfaction of the requirements and essential missions of the Armed Forces;
- comprehensive, covering all weapons systems, and all aspects of Armed Forces;
- start-to-finish, covering all stages of the acquisition life cycle.

Initial forms of complex prospective planning have become:

- control figures of defense budgets for ten years;
- main directions of weapons development for 15 years, substantiating guidelines and tasks for armed forces weaponry development and the most important performance levels of weaponry types;
- ten-year weapons programs containing an enumeration of state plan tasks for research, development, test, evaluation and production of weapons systems, including volumes and time and costs of work.

He also noted the following functions of the Head of Armaments of the Russian Federation Ministry of Defense: prioritizing research and delivery of weapons systems according to the interests of all components of the Armed Forces; optimization of budget allocation and material resources between types of Armed Forces; elimination of duplication in industry performing orders for different types of Armed Forces; and what is especially important, identifying bottlenecks in development of the whole complex of weapons systems.

Speaking about his own tasks in the Ministry of Defense, Mironov defined them as raising the quality of weapons, and also achieving the following principles:

- operational strategy; and.

- ideological substantiation of future weapons development.

Under the new conditions, the main requirements for weapons systems are:

- high combat readiness;
- combat effectiveness;
- rapid-action capability;
- capability to forestall enemy opening of fire, to deliver strikes and to perform other missions due to a high level of automation;
- stable functioning in the face of enemy use of nuclear and precision-guided weapons, means of electronic warfare and other special weapons;
- maneuverability and transportability;
- universality, ease of control, and convenience in use;
- the least labor consuming, lowest cost of production, storage, operations and maintenance, and maximum length of life cycle.

Priority directions in the development of military equipment, in the words of Mironov, are:

- maintaining the entire complex of strategic armaments at a level which ensures the security of Russia and its allies, strategic stability and deterrence. At the same time, of paramount importance, along with maintaining the operational stability of the strategic nuclear forces is increasing the level of nuclear weapons safety;
- fielding into the Armed Forces of the Russian Federation highly effective means of combat command, communications, intelligence and electronic warfare, thus increasing their combat and operational qualities;
- equipping mobile forces, capable of rapid maneuvering and executing missions in any region of Russia;
- raising the protection of the soldier on the battlefield, and improving his equipment and creating better conditions for crew performance.

Mironov noted that one of his primary tasks as the chief for Armaments is the development of modern systems of managing Defense Ministry orders, especially under conditions of the transition of Russia to a market economy. He spoke of the aforementioned program of armaments to the year 2000 and drew attention to the trend toward constant decreases in the share of expenditures on procurement of military equipment as opposed to increases in appropriations for personnel maintenance. Among the problems which complicate the work of the Chief for Armaments in the sphere of military-technical policy, he mentioned the high rate of inflation, the disintegration of the USSR, and the need to take a whole series of short-term decisions to the detriment of long-term development. He also drew attention to the utilization of old military equipment and the conversion of military production as an additional reserve of the Ministry of Defense in the search for sources of funding for military-technical policy.

The presentation by *Dr. Sergei Kortunov* was devoted to the international and domestic political factors in the formulation of Russian military doctrine and military-technical policy. Among the international factors S. Kortunov focused on the following:

- the transition of the world to a new stage in the development of civilization which is characterized principally by different characteristics of relations between states;
- the disappearance of one of the two superpowers from the political map of the world and the dissolution of the "bipolarity" in international relations;

- the inevitable reintegration of parts of the former USSR on an economic basis, the entry of the contemporary world into a zone of political instability, the resulting end of the Cold War and military-political confrontation between East and West;
- the explosion of nationalism and as a result, the proliferation of weapons of all types in third countries;
- the preservation of military force as an instrument of policy;
- the preservation, for the time being, of the material infrastructure of military-political confrontation, including the production base for weapons creation;
- the transfer of the axis of global confrontation from the plane of "East-West" relations to one of "North-South" relations;
- the unsuitability of existing armed forces, included nuclear weapons, for meeting new missions and problems in the post-confrontation period, and the use of the nuclear factor by third countries as weapons of political terrorism;
- the vagueness of perspectives and conditions through which the economic integration of Russia into the world economic space of the West will occur;
- the deep crisis in Atlantic relations between America and Europe; and,
- the crisis in the traditional concept of collective security, "elaborated" during the course of the Helsinki-Vienna process.

Sergei Kortunov drew attention to the fact that the political declarations and mutual oaths of political leaders in Russia and the U.S. amount to little if they are not confirmed by practical actions. For the present, unfortunately, Russia has reason to believe that there is an intention to integrate it into the world economic system of the West not on an equal basis, but merely as a "junior partner." The so-called "technical" assistance can scarcely substitute for Russian access to the high-technology market, from which, as in the past, it is being excluded.

Among other factors influencing the formulation of military-technical policy, S. Kortunov referred to the incomplete process of Russia's search for its national identity, the deep crisis of statehood; the absence of national borders and, as a result, the absence of clearly understood national interests and a concept for national security; the vague character of relations within the CIS; and finally, the remaining lack of clarity in relations with the West. Sergei Kortunov emphasized that Russian military doctrine and military-technical policy in the forthcoming years will, to no small degree, be determined by the policies of the Western countries, in the first place, the United States.

The Process of Decisionmaking in Weapons Procurement

The presentations made on this question by *Victor Mironov, Evgeni Fedosov, and Sergei Kortunov* noted that, in contrast to the not-too-distant past, the entire military budget at this moment is concentrated within the Ministry of Defense.

The design of military equipment begins with pre-planning research which the scientific-research institutes of the VPK (military industrial complex) perform together with the Russian Federation Academy of Sciences.

At this stage, the generalized conclusion of existing technological knowledge and selection of new technologies are carried out. Alternative variants of future types of

armaments and military equipment are considered. At this point, the "technical look" of future systems is formed (1.5–2 years, sometimes 3 years).

The second stage is design. The design bureau [*konstruktorskoye buro* (KB)] submits a technical proposal and designates a general designer who is the responsible party for project development. At this stage competition takes place between different KBs. An assessment of the cost for a future system is made. Usually coordination is carried out by Ministry of Defense Chief for Armaments; however, each type of weapon system has its own procurement administration.

The next stage is the so-called contract period which takes from 3–12 years (sometimes more, for example, the Tu-160 took 15 years).

The next stage is prototype testing. Industry participates in this. Therefore, it is called factory testing. All in all, a system passes through three levels of defense industry: the scientific-research institutes, the design bureaus and the factories.

The next stage is series production. At this stage certification of items is done with Gosstandart (State Bureau for Standards) and a series sample is prepared. This is followed by tests performed at a Ministry of Defense test site. This is where the Ministry of Defense makes its decision.

Following this, operation-troop tests are performed. It must be borne in mind here that for the length of the entire cycle, the system continues to develop by inclusion of a "feedback mechanism," the taking of corrective actions at various stages.

Later comes the stage of system modernization. The criteria of the Ministry of Defense is the growth in effectiveness by 30–40%. It was emphasized that currently, it is impossible to divide military and civilian technologies, now that we are discussing dual-use technologies.

Aside from this, the Ministry of Defense conducts research in the development of armaments and military equipment which are studied by experts in the Ministry of Defense, the Ministry of Finance and Ministry of Economics. In these studies, priorities of such development are defined. Currently these are:

- development of strategic armaments for maintaining the level of strategic stability;
- development of information support systems;
- development of armaments for mobile forces;
- modernization and support for combat-readiness of deployed weapons;
- orders for new types of weapons which will replace older systems and those that have reached the end of their life cycles.

The Conversion of Military Industry

Dr. Sergei Kortunov's presentation reflected the basic position of the Russian government on the concept of conversion; in particular, it was stated that conversion is a strategic imperative for Russia. This is not only the most important precondition for successful economic reform, but a component part of the post-Communist reform in the former Soviet Union. In the final analysis, conversion should ensure the necessary guarantees for the irreversibility, not only of disarmament, but democratic reform of the country.

In his presentation, *Oleg Lozinsky* pointed out the following negative factors in Russian conversion:

- the practical absence of state support for conversion;
- the disruption in cooperation of defense enterprises after the dissolution of the USSR;

the lack of experience in foreign economic activities by the defense factories;
attempts by state organs to maintain strict control over the foreign economic activity;

- the high inflation rate.

Among the main challenges for the defense industry, Lozinsky noted the following:

- reconstruction;
- the need to procure new equipment;
- retraining of cadres;
- the need for specialists in marketing, foreign economic ties and overall market relations;
- the need to introduce new instruments for managing enterprises, including the wide-scale introduction of computers;
- the need for improved products that are in demand, including through certification based on Western standards.

Lozinsky emphasized that defense enterprises, without hoping for state support, have recently been trying to find their own ways out of the existing situation. In particular they are: developing independent programs of conversion for 10-15 years; searching for joint projects with the participation of potential Western investors; conducting privatization and stock sales in their enterprises; and uniting into associations and funds. In this connection, Lozinsky spoke of the activities of the International Fund, "Integration."

The Russian representative drew attention to the main shortcomings in conversion projects:

- it is being proposed that products of the defense industry be financed which are not in demand on the Western market;
- the search for Western investors is not being conducted professionally;
- projects are suffering "gigantomania;"
- there are no patent rights;
- the proposed projects are not accompanied by marketing plans;
- Western partners are asked to participate only in part of the financing.

Following this, *Dr. William Perry* spoke of the problems of conversion in the United States. Above all, in the U.S., it is not conversion; rather it is *diversification* of production that is occurring. As W. Perry believes, this describes more closely the process in Russia. The differences between the Russian Federation and U.S. consists in the scale of measures being taken. In Russia this process involves 25% of the military-scientific enterprises, compared with the U.S. figure of 1%. In the U.S. this process is taking place under market conditions, in Russia under conditions of an emerging market structure. Finally, in the U.S., the process is taking place under conditions of an economy that is integrated into the world economy, but in Russia it is happening in isolation.

Perry noted that the Pentagon has developed a staged plan for reducing the size of U.S. Armed Forces and defense procurements. Specifically, by the year 2000 the Armed

Forces will be reduced by one-third and modernization costs by 60%. At the same time, military reform in the U.S. is occurring in accordance with the following basic principles:

- (1) reduction of the military-industrial complex;
- (2) preservation of the procurement of unique products, even if the Armed Forces don't need them (products connected with nuclear submarines);
- (3) unquestioned preservation of "dual-use technology" production;
- (4) state support for the process of diversification;
- (5) financing of the program for developing "dual-use technologies" by the state and private sectors;
- (6) state support for the export of defense products, and participation in this work by U.S. embassies abroad;
- (7) reduction of the nomenclature under strict export controls;
- (8) development of state programs for retraining personnel in defense enterprises.

W. Perry recalled that the most important result of the recent visit of Russian Prime Minister V. Chernomyrdin to the United States was the creation of a intergovernmental Commission for Conversion, which Perry chairs on the American side, and with A. Kokoshin and V. Mikhailov as his Russian counterparts. The first meeting of the Commission was scheduled for the end of October of this year.

General Viktor Mironov drew attention to the fact that the Russian defense-industrial complex is ensuring the survival of the Russian economy overall. In particular, state enterprises form 70% of the state budget, but pass through only 30% of the total monetary amount. He drew attention to the fact that Russian banks have shown restraint in investments in industry. Thus, "Promstroibank" (the second largest in Russia) now invests 1%, and commercial banks 3% of their profits in this sphere. He also noted that the basic funds have increased over the year by 200-300%. General Mironov also spoke of a series of conversion projects which the Ministry of Defense is overseeing.

Following him, *Ambassador Thomas MacNamara* identified the basic areas of joint activity between Russia and the United States:

- disarmament and destruction of nuclear warheads;
- nonproliferation;
- the Missile Technology Control Regime;
- joint peacekeeping;
- cessation of nuclear weapons testing;
- battling against terrorism.

General William Odom, summarizing the discussions, noted that the basic danger in the near term will be the reintegration of the USSR *by means of force*. For the U.S., this danger may lead to it turning to a complete focus on its own internal problems.

Proliferation, Deterrence, Stability and Missile Defense

Speaking at a separate seminar on this issue, *Dr. Keith Payne* presented his views on the questions of strategic stability, deterrence and BMD. In particular he focused on the fact

that neither American nor Russian political analysts have a well-thought-out, universally recognized definition of strategic stability.

Under conditions of the end of the Cold War this concept is radically changing. Now it is more correct, according to Payne, to speak not of strategic, but of geopolitical stability. The problem of nonproliferation, under these conditions, is assuming the greatest significance. The creation of BMD, Payne believes, is one of the most important instruments for strengthening geopolitical stability and the nonproliferation regime.

General Malcolm O'Neill drew attention to the fact that at present under conditions of the liquidation of the bipolar world model, many states have been "orphaned." From the standpoint of stability, this is worse than when they were in the orbit of influence of one of the superpowers. In this context, restraint is viewed as one of the means of ensuring stability. He attempted to formulate a definition of geopolitical stability: a situation in international relations which is in accordance, overall, with peaceful evolution. Regarding BMD, General O'Neill drew attention to the fact that the U.S. Administration now considers this problem in the context of theater missile defense. This is considered part of the new concept of active measures for nonproliferation. The first steps in creating a possible joint system is, without a doubt, the creation of an international center for missile attack early warning.

Regarding the concept of ballistic missile defense, this concerns strategic missiles. Russia and the United States must still decide how the creation of such a system will strengthen stability and the nonproliferation regime.

In the opinion of *Professor Sergei Blagovolin*, the situation in the sphere of nonproliferation today is out of control. More than this, according to Prof. Blagovolin, the world is entering into a period of events which will see the use of nuclear weapons. In this connection the nuclear ambitions of India and Pakistan were mentioned.

Blagovolin drew attention to the fact that the problem of deterrence can be broken down into two parts: in the context of relations between Russia and the U.S., and also in relations of the Western countries. Strengthening the potential for deterrence in relations of the Western countries should be ensured by the resolution of two tasks—preservation of a flexible nuclear arsenal, which is superior to those of other countries, and the creation of a BMD system.

Blagovolin emphasized that a global defense system should be built to defend against tactical missiles. However, it should include space-based elements. In this connection, Blagovolin spoke of the necessity to change the outdated ABM Treaty.

Dr. Sergei Kortunov focused on the basic priorities of Russian policy in the sphere of nonproliferation. In relation to joint measures, he described two conventional categories—passive (nonproliferation) and active (counterproliferation). Reviewing the basic premises of the Russian concept of a Global Protection System (GPS), he emphasized that the concept, from the very beginning, was conceived as an alternative to SDI and in the context of active measures against proliferation. Specifically in this connection, joint threat assessments, tied to the proliferation of WMD and their delivery means, have been considered as the initial principle for defining the architecture for a future GPS.

Sergei Kortunov emphasized that the Russian GPS concept is based on strict observance of the ABM Treaty and expressed hopes that, in the immediate future, bilateral consultations on the questions of GPS and strategic stability will be resumed.

Conference Summary

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The following papers represent the proceedings of a three-day international symposium on "U.S. and Russian Military-Technical Policy," sponsored by the U.S. Department of State and the National Defense University, in Arlington, Virginia, September 27-29, 1993.

During the course of this three-day international symposium the Russian and American presenters and invited participants engaged in candid, and informative discussions concerning three broad topics, generically defined as "military-technical policy," that play seminal roles in defining the future international security environment. The three topics, one of which was discussed each day, were: 1) Contemporary Military Doctrine and Military-Technical Requirements; 2) Defense Industry: Procurement, Conversion, and Cooperation; and 3) Deterrence, Stability, and Missile Defense. Throughout the discussions the symposium was chaired by LTG William E. Odom, U.S. Army (ret.), Director, National Security Studies, Hudson Institute, who, with admirable expertise, grace, wit, and good humor, presided over exchanges of ideas that easily could have devolved into a cacophony with so large a knowledgeable group; but certainly did not owing directly to General Odom's skill in making sure that representative views were heard, within the allotted time, on each topic.

Contemporary Military Doctrine & Military-Technical Requirements

The first presenter was Dr. Jacob Kipp, U.S. Army Foreign Military Studies Office, who provided "Historical Perspective on the Development of Soviet Military Doctrine," one aspect of which is "military-technical" and the other "guiding" aspect is "political." Dr. Kipp explained that in the aftermath of the dissolution of the Soviet Union in December 1991, its successor Commonwealth of Independent States had failed to reach any consensus on doctrine, and therefore Soviet military doctrine now had been adopted as Russian military doctrine, following the formation of the Russian National Army in May 1992. This Russian military doctrine is the foundation for a proposed collective security arrangement on the territory of the former Soviet Union. The new Russian General Staff, as inheritors of the traditions of their Soviet predecessors, tendered a revised draft military doctrine in May 1992 that, while recognizing the altered international political conditions, in its "military-technical aspect" sought to minimize the changes to be implemented through military reform by retaining NATO and the nations bordering Russia as potential threats to Russian security interests; suggesting a rejection of the Soviet "no-first-use"

nuclear weapons policy if attacked with advanced precision-guided weapons; and implying that the Russian state continued to be in a pre-war preparation period.

Dr. Kipp concluded that the basis for these Russian General Staff doctrinal assertions was their perception of the nature of the future war threat that first was articulated in the mid-1980s by MSU Nikolai Ogarkov's "revolution in military-technical affairs" and confirmed during the Operation "Desert Storm" aero-space war in which the advanced computer/information system technologies of "reconnaissance-strike complexes" and precision-guided weapons were employed with devastating effect against Iraq in January 1991. Further, the Russian General Staff, as successors of the Soviet General Staff elite, continues to see itself as the repository for responsibility to preserve state security interests. Dr. Kipp suggested in closing that an internal debate was continuing within professional Russian military circles in an effort to refine the nature of the "future war" threat, the strategy, and the force structure required to meet 21st century military challenges.

General-Major Viktor Mironov, Office of the Russian Minister of Defense, then proceeded to enumerate the political aspects of the "Emerging Russian Military Doctrine" as, most importantly, being based on: "the absence of the threat of a Western military attack"; Russian interests in a "stable" international order and avoidance of involvement in territorial and national conflicts; development of the Commonwealth of Independent States as a voluntary collective security, economic, and political alliance; the elimination of war as a means to resolve international conflicts; the protection of Russian security interests; the political and economic integration of Russia into the international community; a significant de-militarization of Russian society; and the building of a democratic government ruled by law that recognized "the primacy of personal rights." General Mironov explained that the actual accomplishment of these goals was an immense task because of "internal Russian political reservations"; the requirement to "remove political and economic 'contradictions' " before significant progress could be made; and the necessity to maintain a "constructive social order" during the transition process. Concerning the "military-technical" aspect of Russian military doctrine, General Mironov underscored three basic premises: 1) optimize research and development of advanced military technologies; 2) modernize of the Russian armed forces; and 3) restructure the armed forces to achieve a "new quality" of combat capability. In closing, Mironov advocated significantly greater U.S.-Russian cooperation in all international security matters, particularly in handling regional conflicts near the border regions of the former Soviet Union, in controlling proliferation of weapons of mass destruction, and in securing Russia's maritime borders by reducing the quantity of naval armaments.

Dr. Sergei Kortunov, Head of the Department of Export Control and Conversion of Military Technologies, Russian Ministry of Foreign Affairs, provided a superb examination of the "International and Domestic Environment" in which military-technical policy and Russian doctrine were being formed. Kortunov explained that a "doctrinal vacuum" continued to exist in Russia because the new military doctrine, which was not one single document but a broad collection of pertinent materials, was still in the process of being formed "with great difficulty" due to the "ambiguity of the present international situation at this turning point of history" in which the Russian government was attempting to "clarify friends, enemies, and threats. Without clearly defined borders and a unifying ideology, the development of a coherent military doctrine is impossible." Dr.

Kortunov enumerated the following as some of the critical international and domestic factors that had to be evaluated in order to formulate the new Russian doctrine: 1) the continuing global transition from a bi-polar to a multi-polar balance of power with the emergence of new economic and military power centers in Europe, the Far East, and Central Asia; 2) the new orientation on a north-south axis versus the previous east-west axis of security threats, especially those new ideologically motivated threats from states that potentially possess nuclear, biological, or chemical weapons of mass destruction; 3) the weakening of the trans-Atlantic link between the United States and NATO as the latter searches for a new "raison d'être" following the end of the Cold War; 4) how to resolve Russia's continuing internal crisis and the "failure of Socialism"; 5) how to change "our senseless social infrastructure" in which the "military-industrial complex continues to produce unneeded, and unwanted, weapons to the detriment of our national living standard"; and 6) the integration of the nations of the former Soviet Union into the Western economic community and especially the granting of access to advanced Western technologies. Concerning this final point, Kortunov emphasized, "Russia requires access to Western technologies. The proffering of friendship and promises of access to technologies is fine, but real actions are essential for integration and cooperation. We must now work together in order to make Russia technologically competitive against her emerging regional security threats." To a question from the floor about "why no Russian military doctrine had been approved during the 16 months since the draft was presented in May 1992," Kortunov responded that the original draft doctrine had been forwarded to the Russian Security Council where it was reviewed and returned to the General Staff and Ministry of Defense for revision. Defense Minister Grachev had sent the revised draft doctrine back to the National Security Council for approval in May 1993 and that as of August 1993 President Boris Yeltsin "was ready to accept" the new doctrine. The reason the process was taking so long, Kortunov underscored, was because "with the end of the Cold War and the implementation of democracy in Russia, we no longer have a unifying ideology or clearly defined political and security goals; and without agreement and direction concerning these factors, it is virtually impossible for us to write a comprehensive military doctrine." Announcement of adoption of the new military doctrine was made on November 2, 1993, subsequent to the conference.

Colonel-General Vyacheslav Mironov, Chief of the Acquisition and Procurement Office, Russian Ministry of Defense, spoke in considerable detail about the "Implementation of Russian Military-Technical Policy" being oriented "most importantly" toward fielding "quality military equipment that determines the readiness of our forces to engage in a future war." After enumerating the weapons systems characteristics that he envisioned as essential, General Mironov said that Russian military procurement was focused on "obtaining the latest technologies; especially in the area of command and control communications," because, "based on the trends revealed by future war models in the 1990s," the Russian Army "could not allow enemies to attain military-technical superiority." To achieve the required qualitative improvements in the Russian armed forces; but also in order to generate funds with which to retain quality personnel as well as improve their housing, Mironov said that beginning in 1988 Soviet weapons procurement was curtailed gradually with the result that between 1991 and 1993 the military share of the total Russian state budget declined from 35% to 16.5%; while the percentage of the military budget spent on weapons procurement declined from 50% to

25.5% in these same years. While recognizing the enormous difficulties facing Russian defense industries, General Mironov emphasized that between 1993 and 2000 the major Russian military-industrial focus (primary task—"glavnaia zadacha") would be research and development of new high quality, advanced technology weaponry, and the military art required to employ these technologies, with the decision to deploy the actual weapons systems after 2000 being made toward the end of this decade. In a closing remark, Colonel-General Mironov asserted, "Technology alone is not a total answer to effective military capability; rather the desired capability is the result of a synergism between technology and military art."

In his presentation on "Future Military-Technical Requirements" Ambassador Henry Cooper, former Director, Strategic Defense Initiative Organization, gave all present cause to think about the implications for "future war" of the near exponential, and irreversible, advance of emerging military technologies. Cooper cautioned that "space was a sanctuary" and "the technologies employed were 10-20 years old" during the 1991 Gulf War that the Air Force Chief of Staff, General Merrill A. McPeak, has described as "the first space war." Ambassador Cooper predicted that by the year 2000 some 30 countries would possess space reconnaissance capabilities and warned that the same technologies that were required to place reconnaissance satellites in earth orbit could be utilized to deliver weapons of mass destruction worldwide. To defend against this expected weapons proliferation Ambassador Cooper advocated "an active defense is our only prudent course" because technological advances in materials and micro-electronics hold the promise of being able to deploy at a reasonable cost by the year 2000 a global constellation of "Brilliant Pebbles" anti-ballistic missiles to augment sea-based and land-based regional missile defenses. Ambassador Cooper welcomed Russian President Boris Yeltsin's historic January 29, 1992 proposal before the United Nations for international cooperation toward creating a "Global Protection System" (GPS) to defend the international community against ballistic missile attack. He concluded by saying, "Efforts to deal with proliferation problems will be a unifying objective . . . to cope with the realities of the post-Cold War world. . . . US-Russian cooperation in creating a Global Protection System can be a cornerstone . . . to assure regional and global geopolitical stability in the new world disorder. . . ."

Defense Industry: Procurement, Conversion, and Cooperation

Dr. Evgeni Fedosov, Director, Russian State Institute of Avionics, opened the second day of the symposium with valuable insights on "Military-Technical Policy and Defense Industry." Academician Fedosov explained that because of the anticipated nature of "future war," as conclusively demonstrated during the 1991 Gulf War, the Russian Ministry of Defense planned to double the relative size of its air forces from the present 12-15 percent of the total military force to 20-25 percent by the year 2000. This will mean that the Russian Air Force is projected to have some 400,000 personnel of the total 1.5 million man Russian armed forces and between 5500 and 5700 aircraft; of which 50-60 percent will be combat aircraft (some 2500-3000 aircraft). The 400,000 personnel level, Fedosov said, is predicated on the proven requirement for between 75 and 80 men to support and maintain each aircraft. Fedosov underscored that improved air mobility would be a

primary mission for the restructured Russian Army and Air Force since air mobility was envisioned as a means to deploy reinforcements rapidly from central military districts bases in order to contain crises at Russia's borders. Concerning tactical and strategic combat aircraft, Fedosov explained that the new emphasis focused on "improved quality across the board" with the introduction into the air force of all-weather and all-aspect weapons systems; advanced information and communications systems; and precision weapons delivery capabilities. The development and deployment of these "required weapons systems" entail the incorporation of advanced technologies utilizing new materials and metals as well as emerging digital, micro-electronic, and optical technologies. In order to facilitate the introduction of these new weapons systems, and to hold down costs, the Russian aviation industry intends to reduce the number of different types of aircraft that it produces and to concentrate on building multi-role aircraft instead of the single function aircraft that it produced in the past. Further, by combining civilian and military research and production facilities between 1993 and 2000 will allow Russian industry, not only to economize, but to replace older aircraft systems more quickly.

Dr. Robert Stein, Vice President, Advanced Air Defense Programs, Raytheon Company, presented a thought-provoking depiction of "Military-Technical Requirements: The View from Defense Industry" by describing in considerable detail the "information processing revolution" that has now made, and is continuing to make, "time the essence of victory." Dr. Stein explained that ultimately the implementation of this technological revolution that would enable computers and communications systems to accomplish of "billions of operations per second" would be determined mainly by 1) government policy decisions concerning the likely nature of future conflicts; 2) military requirements; and 3) the "acquisition environment" which determines the available industrial base. Used offensively, the emerging information system micro-technologies would make possible the creation of even more accurate stand-off precision guided missiles with a significantly longer range, as well as improved electronic counter-measures and means to more effectively disrupt command and control systems. The communications systems now coming on-line, or projected to be operational by the turn of the century, will allow the U.S. military to eliminate its regional intelligence centers since it soon will be possible to provide global real-time targeting and battle damage assessment to local commanders directly from CONUS facilities. Used defensively, Stein foresees the "information processing revolution" as the foundation upon which extremely reliable theater defenses can be deployed against both ballistic and cruise missiles—the development of effective defenses against the latter being "absolutely essential."

Following the most informative presentation by The Honorable William J. Perry, Undersecretary Deputy Secretary of Defense, concerning the Clinton Administration's defense policies and priorities, Dr. Sergei Kortunov and Mr. Oleg Lozinski, Counsellor to the Department of Export Control and Defense Conversion, Russian Ministry of Foreign Affairs, offered some most illuminating views concerning the "Defense Conversion" that the Yeltsin government would like to initiate. Following the December 1991 dissolution of the Soviet Union, Russian "democratic" reformers found themselves saddled with "a militarized economy in which the military budget consumed in excess of 35% of the Gross National Product." Kortunov continued, that in order to initiate the transition from an "internationally isolated Communist command economy to a democratic free market economy integrated into the world market" the Yeltsin administration has "cut the defense

budget between 60 and 70 percent since 1991." Mr. Lozinski offered a comprehensive description of Russian efforts to reduce military spending and described "defense conversion" as a "reorientation of defense industries" that "unfortunately, has not yet begun," except on paper because of continuing state financial support for defense industries and the absence of private credit and investment. Kortunov revealed the "contradiction" that while the Yeltsin government is attempting to convert defense industries, "it must avoid dissipating Russian defense industries since the Russian state continues to have legitimate defense requirements and has a responsibility to 25–30 million people who are dependent on military industry for their livelihoods." Mr. Lozinski estimated that the conversion of Russian defense industries will cost some \$150 billion over a 7–8 year period; but suggested that for the immediate future technical expertise about what and how to convert defense industries is more important for Russia than financial assistance alone. While the Russian government is still in the process of creating the legal, economic, and political conditions that would be favorable for the participation of Western investors, Kortunov expected that the primary defense conversions eventually will take place using private non-governmental resources; but with the "certification of individual conversion projects by the Russian government." The Russian National Conversion Council is trying to "identify and remove obstacles in order to facilitate this process." Kortunov enumerated a total of 26 thoughtful actions that Russian and foreign governments might take, together and separately, in order to accelerate the "conversion process." In the end what both Kortunov and Lozinski envision is the creation of a defense industrial system similar to the French model in which there is a close integration of government with private enterprise.

Deterrence, Stability, and Missile Defense

Following a thought-provoking introduction by Lieutenant General Malcolm O'Neill, Director, Ballistic Missile Defense Organization, the third day of discussions began with a discussion of deterrence and stability in the post Cold War period. Dr. Keith B. Payne, President, National Institute for Public Policy, discussed "Proliferation, Deterrence, Stability and Missile Defense." The focal point for discussions, in brief, became Dr. Payne's general conclusion, that "stability" (*"stabilnost'"*)—defined as a quantitative balance of vulnerability, or bi-polar "parity," between U.S. and Soviet strategic nuclear forces—is no longer particularly relevant or valid basis upon which to center international relations in the increasingly complex multi-polar world following the dissolution of the Soviet Union; nor is a bi-polar policy of mutual deterrence (*"sderzhivaniia"*) likely to control international conflict in the future given the accelerating proliferation of weapons of mass destruction and the means to deliver them.

There appeared to be a consensus with the general thesis developed by Dr. Payne that the "new world order" required new methodologies and new approaches for measuring "stability," because the straight-forward quantitative "stability" equations developed, and enshrined, over the last forty-odd years were incapable of accommodating the unpredictability of the new multi-polar international security environment and the value systems of individual nations. The participants collectively acknowledged that the theology of "stability" (*"stabilnost'"*) would continue to have its devout adherents as long

as nuclear weapons exist; and found it unrealistic to expect arms control negotiations to succeed in reducing nuclear weapons levels to "zero."

Consensus also developed around the notion that international cooperation on ballistic missile defenses can positively influence "stability" by preserving freedom of U.S. action, dampening incentives to escalate, enhancing international cooperation, and that a cooperative transition from security policies based on Mutual Assured Destruction (MAD) to Mutual Assured Protection (MAP) required further investigation. To this end, the Russian participants called attention to President Yeltsin's January 1992 proposal for the international development of a "Global Protection System" (GPS) against ballistic missiles as a means to advance cooperative relationships that could contain the new threat of "authoritarian and local dictatorships." They also reminded the other participants that the Russian Academy of Sciences was sponsoring an international conference on November 22-24, 1993 in Moscow for the specific purpose of discussing GPS and "political and technical measures aimed at preventing possible proliferation and use of ballistic missiles."

During the closing question and answer session, Colonel-General Vyacheslav Mironov offered some very important clarifications to the formal presentations made during the symposium: first, "the development of advanced technology weaponry is a strategic mission for the Russian military"; second, "the Russian government will maintain strict control over the Russian economy, mainly because our experience with a market economy is that private business hides its profits and pays no taxes to the state"; and third, "conversion of defense industry is directed toward the development of advanced technologies and a diversification of the Russian defense industrial base." This third point apparently contradicts the commonly-held view in the West that Russian defense conversion is primarily a means by which to improve living standards by shifting from military production to the production of consumer goods.

Colonel-General Mironov also spoke about the most significant, indeed, perhaps even profound, action that the new Russian Ministry of Defense has taken to date in its effort to bring 'stability' (*ustoiichivost'*) to the turmoil within its military-industrial system—namely, the management of all military production now has been consolidated under the Ministry of Defense. Despite the 1970 Soviet initiative to centralize control over weapons development, prior to 1992, nine separate, and highly independent, ministries controlled individual segments of military production. Now, according to General Mironov, the Russian military has central control over all military production and will direct subordinate industrial enterprises to fulfill military requirements from "start-to-finish of the acquisition cycle." This decisive action realizes a historic "dream" of Russian military leadership—in theory at least, military requirements now will drive actual military production. In practice, however, the technological limitations of the generally obsolete and decrepit Russian industrial infrastructure may very well prevent the mass production—but not the development and building in limited quantities—of the high-quality, advanced technology weaponry that the Russian military perceives as absolutely essential for any "future war" in the "Information/Computer Age."

I. U.S. and Russian Military-Technical Policy

U.S. Military Acquisition Policy

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I'm going to talk about two different related subjects today. First, I want to talk about the developing relationship between the United States and Russia in the wake of the ending of the Cold War, and, second, the changes in the U.S. Defense Department as a result of these changes, and in particular, the new requirements for a defense industrial base in the United States.

We are seeing things today that we could not have even imagined four or five years ago. Just a few weeks ago General Grachev, the Defense Minister of Russia, visited us at the Pentagon. That in itself would have been a noteworthy event a few years ago, but even more noteworthy was what we discussed and what we concluded at that meeting. We discussed almost everything in terms of the mutual security issues between the United States and Russia. We ended that meeting with the Secretary of Defense and the Defense Minister of Russia signing a cooperative agreement. This is an agreement which provides for joint training and joint exercises of a division of the United States Army and a division of the Russian Army. They are to train together in preparation for joint peace keeping operations.

We also established at that meeting the agenda for and the terms for the first meeting of a joint U.S.-Russian commission on defense conversion or defense diversification, as we now call it. I'll be talking more about that. But this commission is really one part of a much larger agenda on U.S.-Russian cooperation.

It was about a month ago when Prime Minister Chernomyrdin visited the United States for a meeting with Vice President Al Gore. At that meeting, they agreed to proceed on six different commissions. Each one of these six will be a joint commission with American and Russian participants working together to promote the cooperative program between the United States and Russia. One of these is in the area of business development. That one is chaired on the U.S. side by Ron Brown, who is our Secretary of Commerce. There's a joint commission on space, which already has made several landmark agreements for cooperation between the U.S. and Russia. In the United States, that commission is chaired by Dan Goldin, who is the NASA Administrator. The commission on energy is chaired on the United States side by Hazel O'Leary, who is the Secretary of Energy. A committee on cooperation in science and technology is chaired by Dr. Gibbons, who's the President's science advisor. We envision one on cooperation in environmental issues, although that commission has not yet been fully established and the chairman has not been named. Finally, this committee on defense conversion. We changed its name to Defense Diversification as being more descriptive of the sort of activities we are going to be involved in. On the United States side, I'm the chairman and

on the Russian side, there are co-chairmen. One of the co-chairmen is the Deputy Minister of Defense, Andrei Kokoshin, and the other is from the Economic Ministry, Valeriy Mikhailov.

We will probably have our first meeting in late October, although the turbulence in Moscow in the last week or so may end up delaying our meeting and getting it pushed off until November. The meeting will be in Moscow, and it will be focused primarily on looking at the various efforts that the Russians have already underway for converting their defense industry into the production of civilian and commercial products. We will be looking at concrete and specific projects which the United States can undertake to assist in that diversification effort. We have, of course, in the United States a similar program in defense diversification. Both countries are trying to do the same thing, to take this large portion of the defense industry no longer needed for defense production and find constructive uses for it that will stimulate the economy in other ways. I don't mean to mislead you though by comparing the problems of the two countries, because while they are similar in their nature, they are very different in their details.

Let me just summarize what are the three largest and most obvious differences between the problems we face in defense diversification and the problems that the Russians face. First of all, there is the magnitude of the problem. We started off in the late 1980s with a defense that was about 6% of our gross national product, and we've already brought that down to about 4%. We have about another 1% of the GNP to go, so that defense will be down to about 3% of our GNP. On the other hand, the best estimates we can make of the situation in Russia is that defense comprises about 25% of the gross national product. We do not have exact numbers, but we know it is a large percentage, certainly much larger than that of the United States. We're talking about shifting a much bigger part of the economy from defense production to nondefense production. Moreover, based on my own observation, I would say it is the best part of the Russian economy, the best trained engineers and scientists, the best managers, the best facilities, the best equipment. From the Russian point of view, this is not something that they can let wither away. It is a strategic imperative for the Russian government that they find a way of converting this industry over into production which will be useful to their developing economy.

The second difference between the United States and Russia is the difference in infrastructure. If a new company starts up in the United States to produce commercial products, there is in place the infrastructure necessary to support that company, and it is immediately able to start functioning with suppliers, investment bankers, and merchant bankers. It has all of the facilities it needs for starting this industry. That is not true in Russia, and that is a major problem for new companies trying to get started in Russia today. The third, very important difference is that when an American company starts up, brings a new product to the market, it must be immediately competitive with the world market. That is a major difference on the negative side, from the point of view of American companies. Yet, many of the failures of defense conversion in the United States can be attributed to just that problem. It is not that defense companies are not able to build useful products in the commercial field, it is that they are not competitive in the world market. They were a few percent higher in cost and they did not have a well-developed marketing system. On the other hand, a Russian company introducing a new product in Russia has virtually a protected market that is not price sensitive. These are

vast differences in the problems faced by the two countries. Nevertheless, we both have the same objective, and that is shifting this valuable resource in both countries over to useful, productive economic purposes, and we're going to work together to see if we can help each other do that.

Defense diversification or defense conversion is only one aspect of the major changes which our countries are facing today. From the Defense Department point of view, the ending of the Cold War posed much more fundamental questions than that. We started off with very fundamental questions, what is the purpose of the military of the United States, how large should it be, how should it be organized and how should it be equipped? And we started off believing that simply shrinking the forces we had during the Cold War was not an appropriate way to answer those questions. Our forces need to be restructured, and the restructuring needs to be based on a re-evaluation from first principles. With that in mind, when the new Administration came into office in January, we were seized immediately with the idea of doing this first principles re-evaluation, which we came to call the Bottom-up Review. That was started in early March, and we just completed it a few weeks ago, and presented the results to the President. He approved it, and it has been briefed in several fora now.

I will summarize the major tenets of the Bottom-up Review, which started by re-defining the dangers or the threats to United States security. These threats are quite different than we faced in the Cold War. With that definition, we then looked at what new military strategies, what new security strategies, were appropriate for these dangers. With those defined, we went into defining the elements of the defense forces that were needed. We started off with the force structure, went to the equipment—the modernization programs that were needed to support that structure—and then to the infrastructure needed—the bases, the depots. We then looked at the defense industry needed to support that structure and finally ended up with resources—the budget that was needed. All of that was done as a part of this Bottom-up Review. I will summarize some of the principal conclusions for you now.

The first was that we could safely reduce the size of our military forces from a number that was 2.1 million in the late 1980s, down to a number of 1.4 million. So we are projecting a one-third reduction in our military forces. Those are active duty military forces. There are comparable reductions envisioned for reserve forces and for the civilian employees of the Defense Department. Now besides that one-third cut in force structure, we're expecting a budget cut, the total resources available to us, of about 41% from the period of the mid-1980s to the period of the mid-1990s. That does not give us the whole story though, because if we look at different components of this budget, we see changes that are different from that. In particular you can already deduce that if the budget is being cut 41% and the force structure's only being cut 33%, some other components of the budget will have to be decreased disproportionately greater than that. Since we have pledged to maintain the readiness of the forces, that means that the operations and maintenance account has to stay parallel with the force structure. There are only two places left then to make the compensatory reduction—modernization and R&D. I'll get to the R&D in a moment, but the brief summary of all this allocation of resources is that the modernization account is the one that takes the heavy hit, and it will be decreased in this period something in the order of 60%. I compare that with figures that have been quoted to me by my Russian friends that the procurement account in the Russian defense

budget is being decreased by about 80%. I can't independently verify those figures, but that is a figure which has been quoted to me by senior officials in the Russian Defense Ministry. So they're looking at about an 80% cut in their procurement account, we're looking at about 60% cut, but our 60% is spread out over a longer period, from 1986 to 1996.

Now with that substantial change, we recognize the danger to our ability to maintain forces at the technological cutting edge, both because our defense technology will diminish and because procurement is down. We're not buying as much equipment. Forces in the field will end up with successively older equipment that eventually becomes obsolete. So we looked very hard at the question of what we could do to maintain a vigorous defense industrial base, because our defense industrial base is what provides the technology that provides the equipment for our forces. I'm going to summarize for you today seven conclusions we came to that will drive our thinking and our actions over the next decade—the steps we can take to maintain the defense industrial base in the face of the ending of the Cold War and in the face of the reduction in budget size that I have described.

The first of those is that during this period of budget reduction, we will maintain our defense technology base. To be more explicit, the 6.1, the 6.2 and 6.3A budget—that's the nomenclature for the part of the budget that deals with the technology base—will be held essentially constant for the planning period which we are looking at. So that's the first step in this policy of what we do to maintain our defense technology base in the face of defense reductions. I might say parenthetically that's one of the reasons that the procurement account will go down so much is because we are maintaining the defense technology base. Another parenthetical comment is that by the mid-1990s we will see our technology R&D budget almost equal our procurement budget.

The second conclusion involves the procurement end of this budget, that part of the program which builds hardware and supplies it to our military forces. We will procure defense unique items even if that product is not necessary in the quantities needed by the military forces.

Let me be specific and give you an example. This was one of the more controversial conclusions in the Bottom-up Review—nuclear submarines. In the analysis in the Bottom-up Review, we concluded that we could reduce the quantity of submarines, attack submarines, in our force by one-half, from a number just under 90 to a number just below 50. With that conclusion, it was obvious that we don't need to build submarines for a number of years to maintain the number of submarines we need in the force. On the other hand, after a period of time the submarines that are in the fleet would wear out, become obsolete, and in about a decade we would need to start building them again, just to maintain a fleet of 45. Therefore, the issue that confronted us was, in that period between now and the end of the decade, should we shut down the submarine building facilities and then reopen them at the end of the decade, or should we continue to produce submarines at a low rate during that period as a means of sustaining the industrial base capability? The conclusion, and this is a very controversial conclusion of our Bottom-up Review, was to take the latter approach, namely to continue to build nuclear submarines at a low rate during that period. The reason for that conclusion was that we had plans in front of us for mothballing the factory that makes the submarines and then reopening it, but we didn't have any plan for how you would mothball the intellectual capital that goes

into making submarines. Our fear was that once we shut it down and the people dispersed, it would take us years, probably decades, to try to reassemble and rebuild the intellectual capital. Our second concern was that the problems of getting approval for starting and recertifying a nuclear facility would be formidable. For those reasons, we decided that we would maintain a defense industrial base by continuing to build submarines at a low rate.

We made that same decision on several other programs as well, but I want to emphasize to you that these are the exceptions and not the rule. For example, we did not have to make that decision in the area of tactical fighters because the program already envisioned for tactical fighters provides an industrial base. While it is much smaller than the industrial base we had in the mid-1980s, it would still be adequate and would maintain the necessary intellectual capital.

Now the third aspect of maintaining the industrial base, and this is really the major strategy, was to look at those technologies and components and subsystems that go into defense equipment from the broad base of our commercial industry. These are the so-called dual-use items. We concluded that if we could convert a larger portion of our procurement to dual-use items we would be able to sustain that portion of the defense industrial base if we maintained a robust economy with no special actions on the part of the Defense Department. Now there's one catch in that plan, and that is that through the decades, the Defense Department has established barriers that prevent program managers on defense programs from making full use of the products in our commercial base. Those barriers are called procurement regulations, military specifications and security regulations. So if we're going to truly make full use of our vast industrial base, we have to find some way of reducing those barriers. The name of the program to do that is acquisition reform. So a fourth conclusion of the Bottom-up Review is that in order to sustain our defense industrial base, we need to embark on a major reform of the defense acquisition system. The objective of that reform is to integrate the defense industrial base into the national industrial base. That will be a major objective of our efforts in the Defense Department in the years to come.

A fifth conclusion is that we would need to support and assist defense companies in their efforts to diversify. I've discussed with you already some of the problems of diversification in Russia. We have problems in the United States as well. The Defense Department has some responsibility to assist in diversification efforts. The primary way we will be fulfilling that responsibility will be through acquisition reform. To the extent we can remove those barriers, one of the side effects is to make it much easier for defense companies to diversify, to work in commercial fields. One of the reasons they are not competitive after they develop a product is that they bring with them into the commercial market all of the overhead, all of the burden, that they carry in order to satisfy defense regulations.

The second thing that the Defense Department will do to assist defense companies in diversification is to establish vigorous programs in dual-use technology. We will, over the period of this fiscal year and next fiscal year, dedicate more than one billion dollars for investment in dual-use technology, much of it through a program called the Technology Reinvestment Program. It calls for a comparable investment of another one billion dollars from the industries involved. So we have a very large amount of money dedicated to the development of dual-use technologies and products that can be used both in the Defense Department and in the commercial world. This investment by the Defense Department

will be one way of assisting defense companies in their diversification efforts.

A sixth objective for the Defense Department is to reduce our overhead in bases, depots and civilian personnel. It is necessary to bring this overhead down in order to make more funds available for forces and for modernization programs. That's already a difficult and a painful process to pursue. Americans who have read the newspapers in the last few months know we are in the process of closing bases all over the United States, and it's causing real pain in the communities where those bases are located. I personally visited four of those communities and discussed with community leaders the set of problems associated with closing the bases in their area—the loss of jobs, the dislocation, environmental problems. The Defense Department will assist those communities in their conversion over to a commercial economy and away from the defense base, but this will be a difficult and a painful process. It will be resisted by the communities and by the politicians who represent those communities.

A final point in this regard is that the government will assist U.S. companies in exporting their products across the world. Part of this can be in administrative assistance at our embassies, helping businessmen who are trying to do business in that country. But another part of it is removing, to the maximum extent possible, the government as an obstacle to doing business overseas. Particularly with our technical products, we have a vast, complicated set of export controls, rules, and regulations. They do two things. First, they involve a process which takes a company's time and effort. Even if the export request is finally approved, it slows them down in getting a product to the market. If it's not approved, of course, they don't get to the market at all. So it seemed to us that one of the principal things that the government can do to assist in this process is to remove those export controls to the maximum extent possible. We are now in the process of a vigorous review of this whole problem, and I expect as early as this week announcements about the conclusions. In particular, I believe that we will see the U.S. government simply remove from controls perhaps 60% of the computers that we sell in the world today. At present, all of the computers except the very, very low end PCs are controlled. So to the extent we can remove controls on 60% of that market, we're opening up that much trade for United States companies. That is precisely what we will be doing, and I expect the first actions on that as early as this week.

I'd like to conclude this description of what we're going to be doing with a quote from Churchill. During World War II, he said, "You can always count on Americans to do the right thing after having first exhausted all other alternatives." As we look at these issues with our defense industrial base today, we have demonstrated many ways of doing it wrong. I hope we have exhausted all of those alternatives now, and the program I've described to you today is finally doing it the right way.

Russian Military Doctrine and Military Technical Policy: An American Military Historian's Perspective

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Military Doctrine: The Issue

No terms create more confusion between Russian and Western military specialists than doctrine and military doctrine [*voyennaya doktrina*]. A standard, official definition used by U.S. Joint Staff states that doctrine enunciates fundamental principles by which military forces guide their actions in support of objectives" [1]. In Western usage, however, doctrine covers a wide range of concepts, which may or may not be authoritative or connected with military affairs and national policy. It can represent the basic concepts employed by a particular military service to organize, train, and engage its forces such as Air/Land Battle or Maritime Strategy. It is what translators call a "low context" term. In contrast, military doctrine in the Soviet Union was "very high context" and authoritative [2]. Up to the collapse of the USSR, Soviet military doctrine was defined as:

A system of views adopted in a state at a given (specific) time on the content, goal, and nature of possible future war, on the preparations of the country and the armed forces for it and the means of conducting it. The basic propositions of military doctrine are conditioned by the socio-political and economic system of the state, the level of development of the economy, the means of conducting war, military science as well as the geographic situation of the country itself and that of the country (countries) of the probable opponent [3].

Since the end of the Soviet Union, Russian military scientists have sought to adapt this definition to Russia's new security requirements in a new, multi-polar, international system during a time of profound natural and geopolitical changes. General M. A. Gareev, mindful of differences in the Western and Russian/Soviet use of the term, offered the following definition, which underscores these changes:

... a system of views, officially accepted at the national level, on defense questions. It does not include all existing military-theoretical ideas, which in the case of sciences can be both diverse and contradictory. Instead, it includes only the fundamental, leading, officially accepted principles of military theory and practice which are mandatory for all governmental bodies and military personnel [4].

Gone are the references to future war, replaced by the more general proposition of "defense questions." Garceev defines such questions as "the attitude towards war and the paths to its prevention, the presumed nature of the military threat, military-political goals and tasks in providing for the security and defense of the nation, and the direction of military development" [5]. In the Russian case we are watching a significant process of change from a military doctrine shaped by the institutions and ideology of the Soviet state and the Communist Party. The shift is from one of the most militarized and centralized orders in world history to a Russian nation-state, engaged in political, social, economic, and military reconstruction. The formulation of a Russian military doctrine for this new era has proven to be a politically charged topic, just as it was in the past.

Military Doctrine in Russian and Soviet History

The origins of the term, "military doctrine," in Russia can be traced back to the period of military reform following the Russo-Japanese War of 1904–1905, when the calls by reformers within the Imperial General Staff for the creation of a military doctrine were linked to the postwar transformation of the army and the redefinition of military art to include a focus on the conduct of operations as an intermediary category between strategy and tactics. Military theorists and practitioners were in the process of digesting the lessons of the Russo-Japanese War even as they prepared for a general European war. Ultimately, Nicholas II put an end to that debate by claiming that, as autocrat and commander-in-chief, military doctrine was what he said it was. Given Nicholas II's attention to the details of militaria and given his lack of knowledge of military art and science, military doctrine could not serve the task imposed upon it by reformers in the Imperial General Staff. Thus, the Tsar, in the opinion of one recent study of the Russian Army in this period, "failed to imbue the military hierarchy with a sense of over-arching purpose that would have served as the foundation for a 'unified military doctrine' (even if the Tsar himself understood that term)" [6].

In the early Soviet period, calls for a unified military doctrine once again arose, echoing those of the pre-war period, but now shaped by the experiences of war, revolution, and civil war. The advocates of the "unified military doctrine," articulated by Red Army commanders and approved by the Communist Party, proposed a combination of ideological assumptions about the class-driven, external threat, the relationship between war and revolution, and their own combat experience during the Russian Civil War. The struggle between advocates and opponents of a unified military doctrine became one of the basic themes of another period of military reform and reconstruction in the 1920s. In this case, however, the Party replaced the Emperor in its claim to the right to define military doctrine. It quickly cast aside the term "military doctrine," however, leaving the Red Army's professional leadership with a specific set of military-technical issues to be resolved by the Main Staff and later General Staff of the Red Army of Workers and Peasants [7]. Neither Frunze nor his successors were to see the articulation of a single "regulation" which would encapsulate all military doctrine and serve as a "Catechism of the Red Army" [8]. By the late 1930s, after the purge of the officer corps, "military doctrine," even if the term was not used, once again became what the autocrat, in this case Comrade Stalin, claimed it was.

The Great Patriotic War strengthened the General Staff's claim of professional competence in resolving military-technical questions, while leaving intact the leader's and the Party's monopoly over military-political issues. While the military-technical questions changed in their content over the next four decades, their form remained relatively constant. They were defined by the existing Party-State structure, and associated with one-party rule in a thoroughly militarized command economy and mass mobilization system. Issues of a military-technical nature, even those involving profound changes in military art, were largely left within the competence of the Soviet General Staff. The exception to this rule came in the late 1950s and early 1960s when the appearance of weapons of mass destruction made it possible to speak of a scientific-technical revolution in military affairs. This debate provided a technical rationale for Nikita Khrushchev to pursue significant reductions in ground forces in the face of opposition within the General Staff. Under Brezhnev the military did not face such challenges over key military-technical concepts. But neither did it control the process of weapons acquisition, where a host of party and state institutions played leading roles in defining weapons procurement choices, research and development options, and even directions of basic research [9].

Confronting an ossified society and an increasingly obsolete industrial plant, the Soviet leadership bought security in quantitative terms, even as Soviet society fell further and further behind its potential adversaries in qualitative terms. The costs of this militarization of society and economy proved so excessive that they undermined the very security of the state, political order, and society they were to defend. That Gorbachev's articulation of changes in the political side of military doctrine and their subsequent extension to military-technical issues, i.e., the proclamation of a defense doctrine, reasonable sufficient defense, unilateral force reductions, redeployments out of Eastern Europe and military reform, should be tied with a larger systemic crisis of the militarized Soviet system was in no way surprising. Gorbachev's efforts to save the system by reform included a significant component of strategic disengagement and de-militarization as gradual evolutionary measures [10]. Leading elements within the military resisted such changes by promoting the countervailing concept of "defensive sufficiency," while other parts embraced reform and most retreated back into professional disengagement from some very messy politics [11].

From Coup to Commonwealth

What has made the current situation so challenging has been the speed with which this edifice collapsed in 1990-1991 and its replacement with an entirely different set of institutional relations in the area of military doctrine and security policy. The end of the Soviet Union left a gap of considerable scale with regard to the fate of its armed forces. With the impending collapse of the union already looming on the horizon in the fall of 1991, some commentators began to speak of the real danger of a "masterless army" [12].

To avoid such a situation and the risk of civil war, a new military leadership, which had emerged only after the failed August coup of 1991, sought some means of maintaining a credible military system and a joint defense effort during the transition period. Marshal Evgenyi Shaposhnikov, the newly appointed Minister of Defense, and General of the Army Vladimir Lobov, the newly appointed Chief of the General Staff,

quickly fell into disagreement over the best approach to military reform. Lobov sought to enhance the position of the General Staff as the "brain of the armed forces" even as he supported concessions to the newly sovereign republics, including the acceptance of the inevitability of the creation of national armies. Shaposhnikov won that initial battle, forced Lobov's replacement in early December 1991, and guaranteed the General Staff's subordination to the Soviet Minister of Defense [13]. That Ministry was, however, to disappear in a matter of weeks along with the Union itself.

In the wake of those events Shaposhnikov became the first Commander-in-Chief of the Joint Armed Forces of the newly-established Commonwealth of Independent States (CIS). Shaposhnikov's goal was to maintain unified control of Soviet nuclear forces, the viable defense of the "common strategic space" occupied by the successor states that had joined CIS, and a unified armed force not subject to the divisive influence of nationalism. Shaposhnikov envisioned a three-to-five-year "transition period" when the Joint CIS Armed Forces would provide continuity, coordination and leadership [14]. The central idea was to keep the process of change evolutionary and to avoid a revolutionary situation during the transition period [15]. Given the momentum of political developments in Ukraine and elsewhere among the successor states, the attempt to halt the creation of national armies proved ineffective [16].

Those who saw the trend towards national armies as the logical and inevitable consequence of the collapse of the union were quick to point out the dangers of gambling on the Joint Armed Forces of CIS as a means of preventing the emergence of masterless armies. They feared that Russians in military service were left "masterless" as CIS proved more and more to be a hollow shell. They argued that only Russia as a sovereign nation-state had a rightful claim on their loyalty. They were aware of a sharp decline in morale and discipline among the armed forces [17].

In early May 1992 Russia moved to counter this trend and created its own Ministry of Defense, General Staff, and Armed Forces. Since then, the CIS security system has evolved, taking on a very different cast with the subsequent signing of the CIS Collective Security Treaty on May 15, 1992, by six of the member states [18].

A little over a year later, President Yeltsin named Marshal Shaposhnikov to the post of Secretary of the Russian Security Council, owing to the reduction in duties for the CinC of CIS Joint Armed Forces resulting from the successor states' decisions to build their own armies. Yeltsin also subordinated the strategic forces to Russia's Ministry of Defense [19]. Shaposhnikov summed up the CIS experiment with collective security as an effort to stop disintegration. He stopped short of any attempt to create a joint armed force, which he called "premature" [20]. The CIS interlude, especially the first five months of 1992, would have a profound impact on the subsequent attempt to formulate Russian military doctrine, since it left many Soviet officers with a sense of betrayal when the principle of common strategic space gave way to national armies.

Russian Military Doctrine in the Transition Period

One of the first acts of the new Russian Ministry of Defense and General Staff was sponsorship of the publication of a draft military doctrine in May 1992. The haste with which this document appeared suggests some of the anxiety felt within the senior military

leadership over the course of events following the dissolution of the Union. In the introduction to the draft military doctrine, the authors referred to it as "an historical category," the basic propositions of which "are conditioned by the internal and external policy of the state, its socio-political, economic and geographic peculiarities, by the level of the development of science [and] industry and by other factors" [21]. Given the profound changes of the preceding six months within Russia and among its neighbors, the very nature of the "transition period" made long-range foresight into Russia's security and defense needs a difficult proposition. As Minister of Defense Pavel Grachev pointed out shortly after the publication of the draft military doctrine, there were still many controversial issues which required further debate [22]. In short, the May document was the beginning of a long and complex process. The draft defined Russia's military doctrine as:

... a component part of the concept of national security and represents a set of views officially accepted in the state concerning war and its prevention, defense forces generation, preparation of the country and the armed forces for repelling aggression, and methods of warfare to defend its sovereignty and territorial integrity [23].

While the draft stated that the development of doctrine was to be done by "the political and military leadership of the state," it did not answer the question of which institutions within the state were to be entrusted with its formulation. Subsequent legislation (i.e., "The Law on Defense") passed by the Supreme Soviet and signed by President Yeltsin in September 1992, charged the General Staff with the task of working out proposals concerning the military doctrine of the Russian Federation and linked these proposals to: the structure, composition, deployment, and missions of the armed forces; their outfitting with weapons and military technology; the training of cadres; and the defense budget [24]. This legislation did not resolve the question of which institutions would be charged with formulating the national security concept upon which military doctrine was to be based.

The draft military doctrine of May 1992 set off a debate over the role of military doctrine in national security policy. While the form of the draft military doctrine had much in common with Soviet pronouncements regarding this feature (i.e., its division into military-political and military-technical questions), its content was distinct enough to suggest an attempt to adjust to new realities. But the prism used to assess those new realities had elements drawn from the Soviet past.

The draft doctrine set out declaratory policy on a wide range of issues relating to war and the use of military power. It committed Russia to seeking a collective security arrangement with the other members of CIS on the basis of bilateral and multilateral agreements. The draft made war prevention the key objective, affirmed the principle of non-intervention in the internal affairs of other states, supported the adoption of the proposition by all states to renounce the first use of military power, and declared that Russia would not use nuclear or other weapons of mass destruction first [25]. Such declaratory statements had been a standard feature of Soviet military doctrine, and here they defined the Russian Federation's attitude toward war in the post Cold-War period.

The assessment of the causes and sources of war in the post-Cold War period noted that the threat of nuclear war and global conventional war had significantly declined. However, the new order was rife with political, economic, territorial, religious, and ethnic contradictions, which could become sources of armed conflicts, local wars and civil wars. The chances of such conflicts had increased [26].

The draft seemed to be an uneasy compromise between those who looked to the legacies of the Cold War to define the threat environment with its probable opponents and those who sought to create a collective security system, composed of several parts, in which Russia might work to preserve the peace, prevent war, and enhance its own international stature and authority. The draft military doctrine identified four basic threats to Russian military security: the efforts of any power to achieve global or regional hegemony by use of military means; the encirclement of Russia by the bases and forces of any state or coalition of states with the intent of using such a favorable military-strategic position for leverage; the unstable military-political situation brought about by the efforts of states to change the existing military balance by increasing their potential or acquiring nuclear and other weapons or using international terrorism; and finally, political, economic, or military blackmail of Russia. The first two points implicitly referred to the U.S. and NATO. The third seemed to address issues closer to home in the "near abroad." It appeared to address primarily the problems associated with Russian-Ukrainian relations and the fate of the Soviet nuclear arsenal and the military balance in the "near abroad." The final category was much less specific in direction and reflected the awareness that Russia, under current conditions, was as much an object as a subject in the international system. Russia had to deal with the legacy of empire—Russian minorities now living abroad due to political changes and the residual deployment of Russian troops in what were now foreign states eager to claim their full sovereignty [27].

This new situation was reflected in the draft's assessment of threats. The end of the Union had left roughly 25 million Russian-speakers and other citizens of the Russian Federation outside of Russia and turned their fate a political issue within Russia itself. Political conflict over the status of the Russians in the "near abroad" was already a serious issue with Estonia and Latvia and loomed as a backdrop to the Russian-Ukrainian quarrel over the Black Sea Fleet, Sevastopol, and the Crimea. By May 1992 the Russian minority in Moldova had already declared its intent to create its own sovereign state, the Trans-Dniester Republic, and Russia's 14th Army was drawn into the ensuing fighting. The draft military doctrine explicitly made the violation of Russians' rights in the other successor states a "serious source of conflict," thereby militarizing inter-ethnic conflict at this very early stage. Moreover, the discussion of inter-ethnic conflict was linked to the threat posed by the introduction of foreign troops and naval forces in the territory of states bordering on Russia and declared such actions "a direct military threat." Finally, the draft warned that an aggressor that unleashed a war using advanced conventional weapons to try to disrupt Russia's strategic nuclear forces, destroy nuclear power plants, or cause ecological disaster by attacking other dangerous objects would have to deal with a Russian nuclear response. In this regard, the draft implied that under the new circumstances Russia would under certain conditions abandon the declaratory policy of no-first use of nuclear weapons because an opponent's use of advanced conventional weapons carried strategic consequences against the aforementioned targets [28]. This linkage of crises in the "near abroad" with foreign intervention and a high-tech threat of

strategic decapitation and environmental catastrophe seemed to suggest that a very stark security climate confronted the Russian Federation.

But at the same time the draft also stated that the Russian Federation considered no single state or coalition of states as its enemy and outlined a host of measures to reduce military tensions and create a new collective security system. Russia intended to cooperate with its fellow member-states within CIS, as well as the other members of CSCE and NATO [29]. Thus, the draft's military-political threat assessment could be said to be ambiguous, reflecting conflicting assumptions about the trends in the international security arena.

This ambiguity was rooted in the General Staff's analysis of the military-technical character of future war. While admitting that "*the immediate threat of a world nuclear war has been considerably reduced,*" the authors of the draft military doctrine asserted that "*a large-scale conventional war*" could develop out of "local wars and armed conflicts aimed directly against Russia, allied states of the Commonwealth or unleashed among other state in regions adjoining its borders" [30]. The description of this conventional war was informed by the General Staff's assessment of the Gulf War and featured air-sea operations during the initial period of war, in which long-range, precision-guided weapons and electronic warfare were employed to disrupt national command and control and strategic deployments, and take individual Commonwealth states out of the war. For this reason the initial period of war was described as having decisive significance for the course and outcome of the conflict. Such deep strikes could also be aimed at the national economy and strategic forces. This image of future war implied an enemy committed to a strategy of annihilation, using advanced weapons systems to achieve strategic decapitation. Thus, the strategic missions of the Russian Armed Forces were defined as deterrence, repelling aviation-missile attack, protection of key administrative and industrial centers, delivery of retaliatory strikes to disrupt enemy large-scale military operations, to inhibit enemy force-regeneration capabilities, and to weaken enemy military-economic potential, repelling an invasion and destroying the invading force, elimination of the consequences of aggression, and disrupting any attempt to renew the aggression [31].

Russian strategy in response to the enemy's seizure of the initiative early in the war was to threaten nuclear escalation in case of enemy conventional attacks against strategic forces or nuclear power installations and to compete for the initiative on the battlefield. In this initial period of war, air, air defense, air mobile forces, and naval forces figured prominently. The draft spoke of simultaneous deep operations conducted by ground forces under a powerful air cover as dominating the subsequent period and implied that the war would become protracted and characterized by strategies of attrition/starvation. Such a conflict could evolve into a nuclear war [32].

The military-technical threat portrayed in this vision of future war certainly was stark. Its emphasis on high-tech conventional weapons would certainly rationalize a shift from a defense posture based upon quantity to one based on quality. To counter such operational capabilities, Russia would require analogous systems capable of inflicting similar disruptions upon the enemy.

Russia does not possess the deeply echeloned forces deployed in forward areas of theaters of military action beyond its borders as in the Cold War era. Instead, Russia has had to redeploy forces back inside its own borders, working out security arrangements

with its fellow successor states, and creating the theater infrastructure for its redeployed forces under new military-political circumstances. What has made this situation tolerable were benign changes in the international situation, through which Russia could see concrete evidence of the decline of the military threat before it. Force down-sizing among the other leading powers had reduced the likelihood of imminent war. It is the interpretation of this situation that conditions the response to a wide range of military-technical questions relating to military doctrine and determines the priorities assigned to certain tasks of military construction.

The draft military doctrine, coming as it did at the very founding of the Armed Forces of the Russian Federation, received considerable attention in Russia and abroad. Some commentators have focused on the stark threat assessment; others have emphasized the attention to the prospects for high-tech warfare in shaping the future development of the Armed Forces and influencing weapons development and procurement; still others have noted the political clout claimed by the General Staff and the Ministry of Defense in defining both political-military and military-technical questions during the transition period [33].

The Military's Debate on Military Doctrine

The subsequent debate of the draft military doctrine among the Russian military emphasized those themes but put them in much broader context. The exercise seems to have been initiated to create support within the officer corps for the proposal. In late May 1992 Minister of Defense Grachev put forth this formulation for a new military doctrine for the Russian Federation:

On the results of this conference the Ministry of Defense and President Yeltsin have placed great hopes, since we have embarked on a period of the creation of new Armed Forces with new structures, with new types of weapons, with new strategy, with new operational art and tactics, but we also understand that the issues are such that the Ministry of Defense and the General Staff are not in a position to resolve alone. Here the help of all officers, commanders and subordinates, of the directorates, staffs, troops, institutions of higher military education and scientific organizations is needed [34].

Colonel-General I. N. Rodionov, Chief of the Military Academy of the General Staff, in addressing both the military-political and military-technical sides of military doctrine, spoke of the special relevance of the Gulf War without dismissing the need to prepare for nuclear war. On the one hand, he used it to make the case for the willingness of the U.S. and its NATO allies to use force in pursuit of foreign policy goals, and he identified the threat posed by high-tech, conventional weapons which, because of the military-political, military-strategic, and military-technical situation confronting Russia and the Commonwealth. The sum of all these factors had become a possible variant for "major aggression against Russia" [35]. In addition, Rodionov argued that Russia had to prepare for local wars near the borders of Russia and the other members of the Commonwealth, as well as in more distant regions, where Russian national interests could be affected.

Finally, Rodionov spoke of internal conflicts, arising out of national or religious antagonisms, which could lead to civil war and foreign intervention [36].

To meet these challenges Rodionov proposed the abandonment of Gorbachev's "defense doctrine," which reflected certain political assumptions and did not take into account "the laws of armed struggle." His criticisms were based on sound, war-fighting principles and his military experience. Russia's new military doctrine had to assert in no uncertain terms that

if an enemy starts an aggression, armed struggle, then its assessment must begin with the laws of armed struggle. Military strategy in this context ceases to be merely the instrument of politics, but must dictate to politics in the name of military effectiveness. Attacks would be directed against the most important military and economic objects of the aggressor country [37].

It is precisely this feature which raises serious questions regarding Rodionov's use of the term deterrence. Rejecting no-first use of weapons of mass destruction, Rodionov posited the formula: "in case of aggression against Russia it will use all means which it possesses for defense of its interests" [38]. While such a position recommends itself by its unambiguous warning and ambiguous execution, it raises serious questions regarding the autonomy of military actors in a war-imminent situation, where preemption might offer military advantages even as such actions undercut political efforts to prevent war. And it is particularly dangerous when tied to Rodionov's vision of a threatening external world:

Very few have wanted to see a powerful, independent, free Russia in the world before or since 1917. Russia became great in many centuries of struggle for survival with aggressors in spite of the efforts of other states. It is a mistake to assume that with the re-examination of our ideological concepts, that all will rush to help to revive Russia. Only Russia's citizens need a Russia economically powerful, renewed, enlightened, and liberated from wars and in this the military doctrine which she is now adopting is meant to help do just that [39].

This portrait of a hostile world puts a particularly depressing cast upon Rodionov's war-fighting interpretation of deterrence, since it assumed a Hobbesian world of nation-states engaged in a zero-sum game of power projection. Given the instability surrounding Russia and the inherent political conflicts among and within the successor states, this was a formula for wars and rumors of wars, when Russia most of all needed peace to carry out internal reforms. Several commentators expressed various aspects of this situation and proposed key changes in military-political and military-technical aspects of the draft [40].

At a conference held at the Headquarters of the CinC of the Commonwealth's Joint Armed Forces on November 5, 1992, General M. A. Gareev raised the question of the relationship between Russian military doctrine and CIS as a security system, suggesting that the CIS also needed a military doctrine. He then proceeded to shift the argument away from trying to write a single document to encapsulate all military doctrine and towards recognizing that four distinct sets of documents had a role in defining military doctrine. The first group included military-political declarations of intent or policy

guidance. The second Gareev described as statutory, i.e., legislation relating to defense issues. The third group related to the military documents covering the combat use of the armed forces in time of war. They include combat regulations concerning training for and the conduct of operations. The fourth group refers to those documents which regulate the life and activities of the armed forces in peace time [41].

Gareev treated the problem of threat perception as one of prudent calculation rather than ideological assumption. States that do not want to be objects in the international system must possess sufficient military force to resist coercive diplomacy. To those who sought to dismiss the use of force in resolving political conflicts, Gareev pointed out that in principle this was fine, but that, in fact, "Without the use of force, unfortunately, one can still not get by" [42].

In another context, Gareev questioned a key aspect of the debate over military doctrine, i.e., its relationship to the problem of military reform as an immediate and practical matter. General statements of principles are fine but they have to include practical suggestions on how such principles might be put into effect.

To assist the President and Security Council in this task, Gareev proposed the transformation of the Military Academy of the General Staff into the "Academy of the Defense (Security) Council" with the task of studying military-political and strategic issues and training cadres for the Defense, Internal Affairs, and other ministries of the Russian Federation and other CIS member-states. It would take on responsibilities in military economics and defense conversion as well. Such changes would have taken military-technical issues out of the exclusive control of the General Staff by using the intellectual capital of its chief educational and research institution to train a new generation of civilian and military leadership cadres. Such a policy would need to create sufficient intellectual capital to make effective civilian control of the Russian military a viable possibility by educating civilian officials in national security and defense policy. This course of action would have ended the military's information monopoly on technical issues and created a set of civilian experts who could with confidence address military-political/national security issues. Without it, as one commentator pointed out, there would be a real danger of a serious disconnect between Russian national security policy, as defined by the President and Parliament, and the military-technical aspects of military doctrine [43].

Military-Technical Policy of the Transition Period

In this context, the issue of Russia's military-technical policy assumed special import. The draft had defined the "military-technical side" of military doctrine as embracing "questions of the evaluation of the strategic nature of a potential war, of strategic planning and employment of armed forces, their missions, the basic directions of the development of armed forces and the navy, their training, equipping, and the organization of daily activities" [44]. The treatment of this issue was quite conservative at this stage of the discussion. General-Major Yu. A. Nikolaev, the head of a scientific-research institute, described it as "one of the basic elements" of national security policy. Nikolaev reminded his readers of the difficult political, economic, and social conditions facing Russia that affect its national security. At no time did the author mention the impact of political and

economic reforms on the military-industrial complex. While admitting significant, positive change in the international environment, Nikolaev stressed the continuing importance of military-technical policy for the security of Russia. The goal of such policy under current circumstances was "the maintenance of the potential of defense sufficiency at the minimal level, sufficient to parry a military threat from wherever it might arise, the deterrence of foreign governments from the use of armed force against Russia to achieve their political and economic goals and countering aggression in case of the unleashing of war" [45].

Regarding the major tasks associated with military-technical policy, Nikolaev identified four:

- creation and support of an effective system of armaments for the Russian Armed Forces, taking into account their structure during the transition period and the economic capabilities of the state;
- the inadmissibility of critical technological backwardness in comparison with the more developed countries, the maintenance of a general, scientific-technical parity in the area of creating contemporary highly-effective weapons;
- ecologically clean and economically profitable utilization of obsolescent military equipment freed up in connection with the reduction of the Armed Forces;
- the rational conversion of military production, taking into account the specifics of the defense complex and its high, scientific-production potential [46].

Under the Soviet system, a highly-centralized planning process had set the State Program for the development of weapons and military equipment. The last of these was enacted in 1990 for the period 1991–2005. While changes in the international and internal environment called into question some aspects of this program, Nikolaev said that certain basic assumptions still applied. These included the maintenance of a nuclear deterrence potential to prevent the use of nuclear weapons against Russia, which the author described as the "most important condition for the prevention of nuclear war." The reduced effectiveness of early-warning, over-the-horizon radars had forced the Russian military to recast the Strategic Rocket Forces and ABM defense by super-hardening, enhancing mobility, reserving systems for combat control and employing active defenses. For the development of a new early-warning system, Nikolaev looked to space-based systems [47].

Nikolaev also addressed countering enemy air-space assault, aggression in continental and oceanic-maritime TVDs, and stressed two aspects of the problem: the appearance of high-accuracy strike weapons in the military inventories of the most advanced states; and the collapse of the old Soviet air defense system, owing to the disintegration of the common military efforts among the members of the Commonwealth. These factors made the development of high-accuracy weapons (ballistic and cruise missiles) and long-range strike aviation, and the perfection of means to conduct anti-carrier operations, top priorities.

Reductions compelled the Russian Ground Forces to give up the long-cherished idea to deploy a deeply-echeloned forces and to return to the problem of covering forces, strategic deployment, and mobilization. Penetrations into the operational depths by enemy mobile forces would be stopped by the development and deployment of advanced air and missile delivery systems, remote mining systems, reconnaissance-strike and reconnaissance-fire complexes, means of camouflage and deception, and radio-electronic

warfare [48]. Because of reduced force levels and the need to reinforce rapidly one of three major strategic axes, Nikolaev stressed the need to create "means of operational mobility, especially aviation and air-transportable armaments of different designations" [49].

Turning to the question of research and development of new weapons, Nikolaev spoke of the need to break with the Soviet model and its "unjustified parallelism and duplication of effort" and increase the centralizing role of the Ministry of Defense in planning and financing research and development of advanced technologies. With the reduction in the defense budget and new priorities, funds for research and development had to be spent in the most effective manner [50].

Addressing the issue of defense conversion, Nikolaev placed the process within the context of restructuring the military-technical system to make use of its potential for contributing to the national economy, while introducing more effective, safer, ecologically pure technologies. Dual-use technologies, for military and civilian utilization, were to be given high priority. Cutbacks in resources led to a defense procurement budget in 1992 of 68% of what was allocated in 1991 and already threatened the collapse of the entire defense industrial system.

Given the economic difficulties confronting Russia during the transition period and the difficulties associated with collecting a peace dividend from the military-industrial complex, it is not surprising that some involved in the debate on military doctrine should propose that foreign arms sales had a critical role in paying for conversion of defense industry geared to high-tech production of advanced weapons to civil production.

Vice President Alexander Rutskoi recommended such a course of action in order to fund programs for a wide variety of programs ranging from research and development to weapons acquisition, and programs for social protection of military personnel and their dependents [51]. The pursuit of such sales in the face of declining orders for Russian military hardware in 1992 has been quite vigorous in 1993 and has been crowned with some degree of success [52]. Major aircraft and arms sales to China, Iran, Malaysia, and Hungary were concluded. In the Hungarian deal, Russia used 28 MiG 29s to cover \$800 million of the foreign trade debt owed by Russia as the heir to the Soviet debt to Hungary [53]. It seems probable that such sales will continue to be pursued as a source of hard currency and as one area where Russia can compete effectively in international trade. Russian arms sales have raised concern in the West when the sales called into question efforts to control a potential arms race either with regard to a particular technology or an unstable region.

In the meantime First Deputy Minister of Defense, Andrei Kokoshin, who had assumed greater responsibilities in a host of military-technical issues relating to research and development and weapons procurement, recast the tone of this debate. Kokoshin described the Ministry's long-range policy for defense procurement in the following terms:

Such a policy must support the development of the scientific-technical base of Russia's armed forces, create a scientific-technical initiative, secure the base for defense industry of Russia into the 21st century to prevent the appearance of a critical backwardness in comparison with the most developed countries, to maintain the ability to maneuver scientific-technical resources, which

would permit the nullification of any effects of possible military-technical breakthroughs in other countries [54].

Kokoshin identified defense enterprises in the areas of advanced technologies as the "locomotives" of Russia's economic development in the next century and advocated a policy which would maintain the vitality of those industries in the interest of Russia's economic and military security.

Whither Military Doctrine?

Since the appearance of the draft Military Doctrine in May 1992, there have been repeated rumors that the draft doctrine was about to be approved by the Ministry of Defense and would be passed on to the Security Council for review before it went to the Supreme Soviet for final debate and ratification by the Parliament and President. Debate and discussion of the draft has continued and become part of the political struggle within Russia itself. Prospects for its adoption waxed and waned over the year [55]. Against the backdrop of a deepening confrontation between President Yeltsin and his opponents, including Vice President Rutskoi and Speaker of the Supreme Soviet Khasbulatov, Russia's constitutional order went into crisis beginning in December 1992. The first round concerned the composition of the government; the second round re-ignited in the spring over presidential authority; the third round continued over the struggle to draft a new constitution; and the fourth culminated with Yeltsin's recent decrees proroguing the Parliament, calling for the election of a new parliament in December, and removing Vice President Rutskoi from office. Each of these crises has undermined the state's ability to govern, even as it has deepened the political crisis and made compromise more remote.

Looking back on the first year of the restored Russian Army in May 1993, Minister of Defense Grachev defended his policies of gradual reform as necessary to restoring stability to the Armed Forces. "Servicemen are wearing their uniforms with pride once again" [56]. Moreover, the military had not been drawn into partisan politics. Nor was it masterless. Whether those conditions would continue, given the deepening of the constitutional crisis, remained open to debate.

In June 1993, First Deputy Minister of Defense Kokoshin addressed the relationship between the military doctrine and military-technical policy of the Russian Federation. Rejecting the idea of a single inclusive document that would encapsulate military doctrine, he rather accepted the idea of the historical evolution of military doctrine and stressed the fact that military doctrine was being formulated at the present time in a situation in which Russia was devoid of probable enemies. Kokoshin stressed the development of those technologies which would keep Russia militarily competitive into the next century and underscored once again the role of the Ministry of Defense in coordinating military-technical policy with national industrial policy. The transition period with regard to the national economy dominated considerations in setting priorities for both policies [57].

The debate, which began over a year ago with the draft military doctrine continues down to this time of crisis. The issues have become highly politicized, and positions are confrontational. The Minister of Defense has declared the draft complete and seems to

suggest that further action is a matter of editorial revision and formal ratification. Others see the question as much more complex. Sergei Stepashin, who was Chairman of the Parliament's Defense and Security Committee, noted that several key issues had not yet been resolved, including "... functioning of Armed Forces in the conditions of a democratic society and the attitude towards Russia's probable enemies and those countries who can regard her as the main source of military menace" [58]. This centrist position still finds support among elements of the military and civilian leadership. Other informed critics now challenge the priority given to the formulation of a military doctrine for the Russian Federation and stress the need for military reform to reshape the Armed Forces to fit a new constitutional order, state system, and nascent economy. Marshal Shaposhnikov, after Yeltsin's announcement of his appointment as Secretary to the Security Council this summer, began to advocate the development of "an integrated concept of security" for Russia, with the Security Council acting as the coordinating body. Shaposhnikov warned that Russia needed such a concept in order to avoid going the way of the Union, i.e., disintegration (what he called a "black hole"), and stated that such a concept would begin with individual rights within state and society in order to achieve a comprehensive collective security system [59].

Others were calling for a revolution in security policy to take into account changes in the international system, strengthen security cooperation, and build a European-wide system of collective security in which Russia would be a prime member. Daniel Proektor has warned that the premature articulation of a military doctrine during a difficult and painful transition period could contribute to the re-militarization of Russia society. These authors share a basic assumption about a benign future environment for Russia, in which *she can undertake profound political, economic, and social reforms* to rejoin a new international order [60].

Given the fundamental nature of the political crisis in Russia, it is not surprising that diametrically opposed views on military doctrine have emerged over the same period. Progress on the adoption of a military doctrine for the Federation has been slow [61]. The discussion has come down to polemics about threat perception. Eduard Volodin, writing in the conservative daily, *Sovetskaya Rossiya*, in early April 1993, spoke of the need for Russia to think of its strategic position, geo-political considerations, and transitional ties, and he depicted Russia's western neighbors as a new *cordon sanitaire*. In short, Russia was already in a pre-war period with the main axis of the threat developing along the Western borderland and the Balkans. For this region, Volodin recommended an overt Russian policy of supporting Serbian interests in Bosnia-Herzegovina [62]. On June 22, 1993, the same newspaper carried an interview with Colonel Evgeniy Morozov, a professor from the Frunze Military Academy, who spoke of Russia's sadly weakened defenses along its western borders, saying that they were much worse than those of 1941 and, by implication, assuming that Russia was in a war-imminent situation. While such a pronouncement might be nothing more than a first shot in a battle to get CFE levels changed to fit Russia's new geo-strategic situation, the tone of the argument sounded more like a proposal for a treaty breakout in the face of imminent war [63].

There is evidence that the political crisis within Russia adversely affected the military. In early August, politically active officers called for early parliamentary and presidential elections to resolve the confrontation between the two branches of government. They warned:

The military is following with anguish and unease the sharpening confrontation between the executive and legislative branches. The armed forces, torn by political differences and enmeshed in political battles, are loosing their combat readiness and are in the process of disintegration. The army, like all of Russian society, is weary of the protracted rivalry . . . [64].

Actions taken by President Yeltsin and Minister of Defense Grachev in visiting units within the Moscow Military District underscored the political jockeying to sustain military support or at least neutrality during the constitutional crisis in September. On his visit to elite units around the capital in late August, Yeltsin asserted that preparation of Russia's military doctrine was "virtually complete" and said that, as soon as Prime Minister Chernomyrdin returned from the United States, the Security Council would take up discussion of the matter [65]. But this plan was overtaken by events with the onset of the present crisis. We can be sure that the outcome will affect the form and content of the military doctrine of the Russian Federation in this transition period.

Notes

1. *Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: Government Printing Office, 1989), p. 118.
2. On the practical consequences of this cultural difference between high context and low context terms in military affairs during the Cold War, see: Robert B. Bathurst, *Intelligence and the Mirror: On Creating an Enemy* (London: International Peace Research Institute, Oslo, and Sage Publications, 1993), pp. 1 ff.
3. A. M. Plekhov, *Slovar' voennykh terminov* (Moscow: Voenizdat, 1989), p. 92.
4. M. Gareev, "Nekotorye problemy voennoy doktriny i Rossiisko-Amerikanskoe voennoe sotrudnichestvo," Forthcoming in: *The Journal of Slavic Military Studies*, (1994).
5. *Ibid.*, p. 2.
6. Bruce W. Menning, *Bayonets before Bullets: The Imperial Russian Army, 1861-1914* (Bloomington, Indiana University Press, 1992), p. 248.
7. Jacob W. Kipp, "Soviet Military Doctrine and the Origins of Operational Art," in: Willard C. Frank, Jr., and Philip S. Gillette, *Soviet Military Doctrine from Lenin to Gorbachev, 1915-1991* (Westport, CT: Greenwood Press, 1992), pp. 85-133.
8. M. A. Gareev, "O nekotorye obshchikh polozheniyakh voennoy doktriny i voennoi strategii," *Voennaya mys' (Spetsial'nyi vypusk)*, (February 1993), p. 38.
9. Viktor Litovkin, "Voennye vyruchayut promyshlennost', oboronschiki--armiyu," *Izvestiya*, (January 1993), p. 5.
10. V. V. Larionov, "Soviet Military Doctrine: Past and Present," in: Frank and Gillette, *Soviet Military Doctrine* . . . , pp. 301-312.
11. "The Soviet General Staff Looks at 'Desert Storm': Through the Prism of Contemporary Politics," in: *The Soviet Military and the Future*, edited by Steven Blank and Jacob W. Kipp, (Westport, CT: Greenwood Press, 1992).
12. Sergei Rogov, "Military Reform: Now or Never," *European Security*, I, No 1 (Spring 1992), pp. 5-12 and Vladimir Rubanov, "Bezkoznaya armiya: Delitsya li bezopasnost' Soyuza SSR na nezavisimost' suverennykh gosudarstv?," *Izvestiya*, (November 22, 1991).

13. Kipp, "The Uncertain Future of the Soviet Military . . .," *European Security*, I, No. 2 (Summer 1992), pp. 213-225.
14. Yevgeniy Shaposhnikov, *Vybor: Zapiski glavkomanduyushchego* (Moscow: Nezavisimoe Izdatel'stvo PIK, 1993), pp. 126-127, 135-136, 145-153.
15. Shaposhnikov, "Rossiya, armiya, politika i opyt kollektivnoy bezopasnosti v SNG," *Nezavisimaya gazeta*, (June 7, 1993), p. 1.
16. On this issue see: Jacob W. Kipp, "The Uncertain Future of the Soviet Military, from Coup to Commonwealth: The Antecedents of National Armies," *European Security*, I, No. 2 (Summer 1992), pp. 207-238; A. I. Vladimirov, "Some Military Aspects of Our Civilization," *European Security*, I, No. 2 (Summer 1992), pp. 184-206; and Bohdan Pyskir, "The Silent Coup: The Building of Ukraine's Military," *European Security*, 2, No. 1 (Spring 1993), pp. 140-161.
17. Kipp, "The Uncertain Future of the Soviet Military, . . .," *European Security*, I, No. 2 (Summer 1992), pp. 230-235.
18. Ronald M. Bonesteel, "The CIS Security System: Stagnating, in Transition, or on the Way Out?" *European Security*, 2, No. 1 (Spring 1993), pp. 115-138.
19. Stephen Foye, "Shaposhnikov Named Security Council Secretary," *RFE/RL Daily Report*, (June 14, 1993).
20. Shaposhnikov, "Rossiya, armiya, politika i opyt kollektivnoy bezopasnosti v SNG," *Nezavisimaya gazeta*, (June 7, 1993), p. 5.
21. *Voennaya mysl'* (Spetsial'nyi vypusk), (May 1992), p. 2.
22. Pavel Grachev, "Vstupitel'noe slovo ministra oborony Rossiiskoi Federatsii," *Voennaya mysl'* (Spetsial'nyi vypusk) (July 1992), p. 3.
23. *Voennaya mysl'* (Spetsial'nyi vypusk), (May 1992), p. 3.
24. "Zakon Rossiiskoi Federatsii ob Oborone," in: *Svod voennykh zakonov Rossiiskoi Federatsii* (Moscow: Voenizdat, 1992), p. 17.
25. *Ibid.*
26. *Ibid.*, pp. 4-5.
27. *Ibid.*, p. 5.
28. *Ibid.*
29. *Ibid.*, p. 6.
30. *Ibid.*, p. 7.
31. *Ibid.*, pp. 8-9.
32. *Ibid.*, p. 8.
33. Mary Fitzgerald, "Russia's New Military Doctrine," *Naval War College Review*, (Spring 1993), and Charles J. Dick, "Initial Thoughts on Russia's Draft Military Doctrine," *Journal of Soviet Military Studies*, 5, No. 2 (December 1992), pp. 552-556.
34. Grachev, "Vstupitel'noe slovo ministra oborony Rossiiskoi Federatsii," *Voennaya mysl'* (Spetsial'nyi vypusk) (July 1992), p. 3.
35. I. N. Rodionov, "Nekotorye podkhody k razrabotke voennoy doktriny Rossii," *Voennaya mysl'* (Spetsial'nyi vypusk), (July 1993), pp. 9-10.
36. *Ibid.*, pp. 10-11.
37. *Ibid.*, p. 11-12.
38. *Ibid.*, p. 13.
39. *Ibid.*, pp. 13-14.
40. Not all commentators agreed with Rodionov's assessment. Some proposed that Russia seek to counter the threat from the U.S. by pursuing closer ties with the European Community [see: N. P. Klokov, "Voennaya opasnost' dlya Rossii: kharakter ee proyavleniya v perspektive," *Voennaya mysl'* (Spetsial'nyi vypusk), (July 1993), pp. 35-38]. Others questioned the declaratory abandonment of no-first use of nuclear weapons as risking the detabilization of the entire military-

political situation in the world [see: M. A. Gareev, "Voprosy voennoy doktriny i stroitel'stva Vooruzhennykh Sil Rossiiskoy Federatsii," *Voennaya mysl' (Spetsial'nyi vypusk)*, (July 1992), pp. 38–41]. Other specialists concerned by the dynamic of the conflicts then developing in the "near abroad" suggested that the military doctrine address the issue of conflict management and Resolution as part of war prevention [see: S. A. Bogdanov, "Podkhod k otsenke vozniknveniya i upravleniya voennym konfliktom," *Voennaya mysl' (Spetsial'nyi vypusk)*, (July 1993), pp. 24–29].

41. Gareev, "O nekotorye . . .," p. 39.
42. Ibid., p. 39.
43. Jacob W. Kipp, Joint Planning and Operations: Towards Understanding: A Military-to-Military Conversation on Doctrine, Military Art and Field Regulations," *The Journal of Slavic Military Studies*, 6, No. 2 (June 1993), pp. 203–207.
44. *Voennaya mysl' (Spetsial'nyi vypusk)*, (May 1992), p. 2.
45. Y. A. Nikolaev, "Voennaya tekhnicheskaya politika Rossii na sovremennom etape," *Voennaya mysl' (Spetsial'nyi vypusk)*, (July 1992), pp. 29–30.
46. Ibid., p. 30.
47. Ibid., pp. 30–31.
48. Ibid., pp. 31–32.
49. Ibid., p. 32.
50. Ibid.
51. A. V. Rutsloi, "O sozdanii Vooruzhennykh Sil Rossii," *Voennaya mysl' (Spetsial'nyi vypusk)*, (July 1992), pp. 49–49.
52. *Segodnya*, (July 13, 1993), p. 3.
53. *Magyar Honved*, (July 2, 1993).
54. *Syn Otechestva*, No. 51, (December 1993), p. 3.
55. The announcement of adoption of the new military doctrine was made in early November 1993.
56. *Krasnaya zvezda*, (May 19, 1993), p. 1.
57. *Nezavisimaya gazeta*, (June 3, 1993), pp. 1,5.
58. Garkusha, "Arrows on Maps," *New Times*, No. 35 (1993), p. 12.
59. Moscow, Radio Rossii Network, 1800 GMT, (July 16, 1993).
60. Iokhen Leser and Daniel Proektor, *Revolutsiya v politike bezopasnosti*, (Moscow: Novosti, 1992), p. 198.
61. *Krasnaya zvezda*, (March 24, 1993).
62. *Sovetskaya Rossiya*, (April 1, 1993).
63. *Sovetskaya Rossiya*, (June 22, 1941).
64. *Nezavisimaya gazeta*, (August 7, 1993), p. 2.
65. Moscow, ITAR-TASS World Service, 1238 GMT, (August 31, 1993).

International and Domestic Political Factors in the Formulation of Military Doctrine and Military-Technical Policy in Russia

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I would like to turn your attention to the singularity of this event. It would have been unthinkable even a year ago when the new partnership nature of relations between Russia and the United States were formally announced. I should admit that even now we have had to overcome quite a lot of difficulties on the path to organizing this representative forum. It should be hoped that it will not be a unique event, but the beginning of a permanent dialogue on such delicate questions as military doctrine and military-technical policy.

I agree with the statements made before me by the American representatives and also the representatives of the Ministry of Defense of Russia in that we are not talking about a completed doctrine and military-technical policy but one that is in the process of elaboration. This process, obviously, is still not finished and judging by the most recent events, will not be finished for some time.

On the one hand, it seems paradoxical that the "Yeltsin Party," to which I belong by virtue of my position, has been in power for two years, yet the job which we assigned ourselves of formulating the basis of Russian military doctrine has not been successfully accomplished. On the other hand, this is natural when you take into account the radical transformation which not only the country, but the Russian consciousness, has experienced. That which occurs in other countries over the course of centuries has been compressed for us into years.

Military doctrine and military-technical policy can be considered in their own way, the quintessence of national military consciousness. It is not surprising therefore, that in a country where national consciousness is being formed, there is neither a clear military doctrine nor clear foreign policy priorities, nor a clear concept of national security. Unfortunately, we still do not know who our friends or our enemies are, what the vital important interests of Russia or the threats to our national security are. Of course, one would like to believe that military doctrine, as General Mironov spoke of it, will be based on the fact that Russia has no, and will have no, adversaries. If this corresponds to reality, then it could be said that this will be so for the first time in world history.

Earlier attempts taken to formulate the basis of military doctrine, as a rule, were distorted by bitter political battles cast in ideological terms, having nothing to do, in general, with the real situation. From this resulted inconsistencies, frequent failures in foreign policy, a lowering of the prestige of Russia in the international arena and of its abilities on the whole to influence the international environment.

Besides this, it should not be forgotten that these attempts were undertaken by people who were raised in the years of the "Cold War," accustomed to thinking in terms of confrontation.

It is obvious, however, that the emerging situation cannot exist indefinitely. A country such as Russia can not live without clearly formulated priorities in national security, based on national interests that, in the end, lie at the foundation of military doctrine. Without this, no serious discussions with allies can take place, nor can there be a well-thought policy in relation to potential adversaries. The diffusion of political orientations in the end will place in doubt the ability of the country to conduct an effective foreign policy.

Military doctrine and military-technical policy, it goes without saying, are formed not in a vacuum but in a specific international and domestic political context. First of all, one should recall two important factors: the end of the "Cold War" and the democratic revolution in Russia. To say this, however, is in essence, to say nothing. Both of these factors influence international security and stability, and the situation in Russia in the modern post-confrontational world in different ways. Consequently, both of these factors influence the formulation of Russian military doctrine and military-technical policy in different ways. Understanding the difficult dialectic of these influences—this is the key to establishing the basis of the future military doctrine of Russia.

First of all, a word about the international factors.

The attention of the whole world today, including the United States, is riveted on our country. Against a general background, it would seem that large changes are occurring only there. But this is a deceptive impression. I entirely agree with General Odom when he says that, at the current moment, not only is Russia changing, but the world as a whole is changing at the same time. The changes in Russia are only part of a general global change. If you like, Russia has become the catalyst for these changes. Apparently, it should be recognized that now the world is gradually entering into the next stage of the development of human civilization. The global transition period to this stage has begun, and it is not the end of history as Fukuyama asserts, but the beginning of new human history.

The end of the "Cold War" did not occur by accident. Those who are accustomed to assessing events in terms of categories of force say that this was a victory of the West. But this is a superficial judgment. The end of the "Cold War" is a signpost on the movement toward a new history. It was prepared for, not only in the countries of the West but also in the former USSR.

To the same degree, the disintegration of the USSR occurred not thanks to Gorbachev or Yeltsin. Instead, this was also a reflection of the global transition period. This was the transitional form of the crash of the command-administrative model of socialism and barracks communism. This was the price for the forced unification of ethnic regions, for forced collectivization and industrialization, for the vulgarization of the great communist ideal. It is obvious, however, that the disappearance of one of two superpowers from the political map of the world is also a most important geopolitical factor, which predetermined the international political environment after the end of the "Cold War." Although the reintegration of parts of the former Soviet Union on a new, and above all, economic basis is inevitable, it is clear to all that the Soviet Union will never exist again.

There is still one extremely important factor that must be considered. The end of the "Cold War" meant that we had abandoned forever that relatively stable world, in which stability was based on force and terror, on mutual deterrence. Leaving that world, we at the same time entered into a period of instability, as change is always accompanied by the potential for instability. I agree with President Clinton who said that our world is becoming less dangerous in the sense that the threat of global war has decreased, but at the same time it is less stable.

This, of course does not mean that we should feel nostalgia for the past. This is merely a statement of reality, of the conditions which we will be living in the course of the coming years. In addition, this reality means that the end of the "Cold War" has led to an unprecedented explosion of nationalism everywhere in the world, and as a result to the proliferation of weapons. Previously, nationalism, as is well known, did not reveal itself because there was a confrontation which dictated its own peculiar rules of conduct by all countries and, in particular, the need for unity in the face of a common enemy.

Now the nationalistic egoism once again has emerged to the forefront. As a result, at this moment, we are witnessing armed conflicts and wars, an increased threat of proliferation of weapons of mass destruction and missile delivery means, as well as conventional weapons. We see how swiftly is growing the demand for weapons, primarily in "third" countries, while the demand for them declines, for example, in Europe. We see convincing evidence of the fact that military force remains a ponderable device in political arguments between different states, primarily those that are located on the periphery of the European continent.

Another important factor defining the international environment is that, although the infrastructure of the "Cold War" has now become senseless, the material basis of this infrastructure—primarily in the form of the mountains of weapons and also their production base in the form of the defense industrial complexes of the industrially developed countries—remains. We see that this infrastructure strives for self-reproduction, leading, in particular, to a colossal dumping of armaments on the foreign market. Unfortunately, we must not conclude that the material stimuli to the proliferation of weapons by the Western countries, at the present time, outweigh the danger of this process. In essence, we are standing on the very threshold of the same arms race which we experienced in the years of the "Cold War," but this time with the difference that this race is taking place in "third" countries.

An obvious factor is that the axis of global contradictions is now rapidly shifting from the plane of East-West relations to North-South relations. However, the means which were suitable for resolving East-West conflicts have turned out to be unsuitable for the complex of interrelations between North and South. In the military sphere this means, in particular, that a nuclear weapon in the hand of a "third" country can potentially turn into a weapon of terror—not of deterrence, which previously regulated relations between East and West. On the whole, armed forces, created and suitable for confrontation between East and West, have become unsuitable for resolving new tasks and problems of the post-confrontational period.

It appears that the modern world can be characterized simultaneously as post-nuclear and pre-nuclear. On the one hand, the experience of such countries as Germany and Japan, having achieved an increase in their prestige—thanks primarily to their fantastic economic growth with minimal military expenditures—shows that the nuclear factor does

not play a large role, at least in relations between the industrially developed countries of the world. On the other hand, we see several states that are beginning to blackmail the world community by threatening to acquire nuclear weapons. We see also such countries as Ukraine and North Korea, using the fear of the world in the face of the nuclear factor for political purposes. In this sense, our world is "prenuclear." The nuclear weapons of England, France, Russia and the U.S. are unable to neutralize the current and potential nuclear terror by "third" countries. In essence, this is a fundamentally new situation in history: the so-called near nuclear states are capable of producing a nuclear weapon in calculable months and are using this factor for political purposes.

As regards East-West relations, in spite of the disappearance of the former traditional understanding of "East" and "West," the rivalry between them, in my view, is not disappearing but shifting onto a new plane—primarily economic. It is obvious that the East is integrating into the economic system of the West. This is an objective and natural process. The question, however, is, on what terms is this integration occurring? Will the East, in the form of Russia and other countries of the CIS and also Central and Eastern Europe, be integrated into the economic sphere of the West as a junior partner or on an equal basis?

It seems to me that this is the fundamental question of world politics, which bears a direct relationship to military doctrine and military-technical policy of the sides participating in the process. For example, the attempts by the East to integrate into the economic space of the West on a non-equivalent basis can lead to a striving by the East to overcome its economic lag through certain military "trumps." In this context, it seems to me that the litmus test of the partnership relations between East and West will be the agreement of the West to do away with the discriminatory trade restrictions, including the notorious COCOM, to allow Russia and other countries of the East access to the markets for missile technologies, space services and weapons.

Political declarations, mutual oaths to friendship and partnership mean little. Only naive people or politicians can take this seriously. Meanwhile, all facts indicate that everyone wants to keep Russia on a short leash: a pitiful pittance, even if it amounts to millions of dollars, scarcely can substitute for Russian access to the high technology market, which we continue to be denied. This is a dangerous game. It is obvious that the West should reexamine the criteria of partnership.

The Atlantic relations between America and Europe are also changing. The "Transatlantic Coupling" in essence, is disappearing, resulting in a deep crisis within NATO. The Atlantic Alliance is seeking a new mission, before it is a dilemma: to disappear or adapt to the new realities.

A most important factor also is the crisis in the traditional concept of collective security, "raised" in the course of the Helsinki-Vienna process. This concept was adapted to the "Cold War," confrontation, and a bipolar world—it doesn't work today. Events on the territory of the former USSR and Yugoslavia convincingly showed us its ineffectiveness. The structures of European security, including NATO turned out to be powerless before the new challenges of the day. Such concepts as the "Common European Home" turned out to be on the ash heap of history.

All of these international factors predetermine the military doctrine and military-technical policy of states of the former East and former West. If we are talking about Russia, we should remember such basic principles of military doctrine, as its defensive

character (mobile fire groupings, first strike echelons, tank concentrations, etc. have disappeared from the structures of the Armed Forces); air mobility; nuclear deterrence on an operational-tactical level; a transition to a corps and brigade structure of the Armed Forces; an orientation toward resolving tasks tied to peacekeeping operations; a transition to a professional army; emphasis on a military-technical policy supported by high-technology; the development of high precision weapons; the development of systems of command, communication and intelligence; deployment of space systems, in particular, for air-space-ground operations; and a relative decrease in the role of heavy weapons.

Now I would like to briefly discuss domestic factors influencing the formulation of military doctrine and military-technical policy. First of all, it should be recognized that Russia has not completed its search for a national identity. The state which was formed after the collapse of the Soviet Union, in essence, never existed before. It did not exist within the borders of the former USSR. Along with this, the apparatus of the former USSR remained in Russia, including, if not an imperial mentality, then a great power mentality. Together with this, in Russia there has emerged a new bureaucracy (democrats) which is free from this mentality, but also devoid of the so-called great power mentality. By the law of the pendulum, we, in essence, have shown our readiness to dissolve the identity in the global economic and political system of the West which recently raised concerns not only in Russia but also in the West.

The essence of the matter is that Russia is undergoing a profound crisis of statehood. It is obvious that in the absence of borders, there can be neither national interests nor a concept of national security, nor military doctrine.

The second important internal (and maybe external) factor is that up until now there is no clear characterization of relations among the CIS countries, in particular, how far the process of economic reintegration will go.

And finally, the last factor is the continuing lack of clarity in relations with the West. In connection with this, one can confidently say that the policy of the West in the coming years will, in many ways, determine Russia's military doctrine and military-technical policy. I impatiently await concrete discussions on these extremely important and delicate questions of national security.

Russia's National Security Military Doctrine and the Outlook for Russian-U.S. Cooperation in the Modern World

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The Military Policy International Aspects of Russia's National Security Interests

The emergence of the new largest multi-ethnic state—the Russian Federation—on the geostrategic map of the world raises the problem of formulating priorities of its national security and military-political interests. The Russian Federation, though it was proclaimed the successor of the Soviet Union as one of the great powers, is not the same country that has simply changed its name. In the past, there was no such state as today's Russia either on a political plane (a democratic system), or on the economic (transition to the market economy) and even on the geographic plane (within the borders of the former RSFSR).

As for foreign relations in general, one can see a steady decrease in the military role and strengthening of economic, scientific, technical, cultural and social aspects of state power and influence.

At the same time, the process of decreasing the role of the military factor proceeds unevenly in different parts of the world. In those regions where military conflicts still exist, where they have recently emerged, or where new hotbeds seem to appear, the military factor retains its importance to a considerable extent.

The most important new aspect of the present military and strategic situation is the absence of the threat of military attack from the West, the gradual transition to partnership relations in the military and political area between Russia and Western countries, and expansion of their cooperation in ensuring mutual security. The revision of the main strategic principles by NATO which is now under way, and reductions by the U.S. and NATO in total strength of the armed forces, in military budgets, and in American military presence in Europe bear witness to the fact that the developed democratic states of the West consider a widespread conflict with Russia, involving the use of both conventional and nuclear weapons, extremely improbable.

On the other hand, relations with the former Soviet republics are of particular priority for Russia for the near future. In these states, Russia has huge economic interests. Without having these interests, Russia cannot operate its own economy normally. Military and political interests of Russia's security in these areas are incompatible with the emergence of hostile states and deployment on their territory of other countries' armed forces bases and facilities confronting Russia. It is necessary for Russia to avoid

becoming involved in territorial and national conflicts with these newly independent states and to establish friendly and desirable allied relations with them. Cooperation with former Soviet republics on the regimes of reduction and limitation of the armed forces and armaments and the spreading of confidence and security measures will promote this end.

Zones of Historical Interest

Eastern Europe, the Middle East and the Far East are the zones of traditional historical national interests of both the former USSR and Russia today. Though Russia is separated now from these regions (with the exception of the Far East) by the belt of the former Soviet republics, it can not remove itself from these areas politically and economically. Furthermore, some former republics might fall under the influence of regional power centers outside the former Soviet Union. Conflict situations in these regions can result in Russian involvement.

Relations with China, Japan, and Korea will to a considerable extent determine military and political security and prospects of economic development of Siberia and the Far East. If Russia's relations with its most important neighbors in Asia become aggravated, Russia will suffer considerable damage.

Under present conditions, Russia's interests in developing relations with the former main adversaries—the U.S. and Western Europe—have acquired a fundamentally new character. Even in the case of more radical strategic nuclear arms reductions, Russia and the U.S. will retain their ability for "mutual guaranteed destruction," which will attach special nature to the Russian-American strategic relations. These relations have already begun to be transformed from confrontation to mutual assurance of strategic stability at the least possible levels of nuclear potential. The involvement of third-party nuclear powers in the nuclear disarmament process and the further reduction of conventional armed forces provide for expanding cooperation with Western Europe which is pursuing the path of economic, political and military integration. This will also promote the prevention of the domination by any European power of the continent. The interaction with these countries is also an indispensable condition for maintaining regional stability in areas directly adjacent to Russia.

It is only within the framework of such relations that it is possible to prevent the proliferation of nuclear and chemical weapons and missiles and missile technologies, and to elaborate a common policy of regulating arms sales and military equipment shipments. Together with the above-mentioned and other states, Russia is interested in UN peace-keeping operations in a number of explosive areas in the world.

The Russian Federation has built and will build its relations with countries of Asia, Africa and Latin America on the non-ideological basis of mutually beneficial economic ties and generally recognized rules of international law and the UN Charter.

Thus, the highest political interests of Russia's national security consists in: stability and security throughout the world; stability and security of the CIS; creation of a situation in which external threats must be reduced to a level of "potential risks"; absence of adversaries and enemies; absolute elimination of war from the life of mankind; absence of the need for protecting external national interests by military means.

The highest internal national interests of Russia are: stable and secure development of Russia proper as a federal state; demilitarization of the state, society, and social consciousness; democratic development of Russia on the basis of its political and economic integration into the world community and of the recognition of the primacy of human rights in all spheres of the activities of a state.

Cooperation of Russia and the United States under Present Circumstances

Radical changes in the system of international relations raise in a new manner the problems of interaction between Russia and the United States in the cause of safeguarding their national security and strengthening international security in general. First of all, these changes include alterations in the political and socio-economic systems of the Russian Federation and states in Central and South-Eastern Europe, as well as the unification of Germany. The unification of Germany in particular meant that Russian and American forces found themselves in the territory of one and the same state, no longer divided by the barriers that had existed for decades.

By itself, the removal of causes that provoked conflicts and acute crises between the former USSR and the United States does not mean the automatic establishment of a wide zone of constructive interaction and cooperation in the sphere of international security. A number of additional prerequisites both of objective and subjective nature are needed.

A number of Soviet and American historians believed for good reason that Soviet and U.S. leaders had missed historic opportunities for such cooperation in the field of safeguarding of international security that existed after World War II. In that period, such cooperation would have entailed the interaction of two giants with undeniable superiority in power and influence over any other state of the world, perhaps with the exception of Great Britain. One should not miss this opportunity today.

New Power Centers

New power centers both on the global and regional level have emerged. Their development takes place not only under conditions of relative decline in the importance of military power (at least in its direct traditional meaning) and the growing significance of economic, social, scientific and technical factors of power and influence of a state, but also under conditions of increasing interdependence of states and peoples.

Many factors set us thinking that we are on the threshold of a new cycle of an increasing nuclear proliferation threat, not to mention chemical and bacteriological weapons. The possibility that these weapons may be used somewhere in the Third World cannot be excluded. This perspective looks even more dangerous because of the emerging proliferation of ballistic missiles of different ranges.

Long ago both scientists and practical workers made sure that the regime of non-proliferation of mass destruction weapons depended not so much on the availability of technical and economic potentialities for their production in a given country as on the political situation in a region or state and on the political leadership of that country, its political aims and values. Accordingly, the question of joint efforts of the Russian

Federation and the United States in the sphere of settlement of regional conflicts and crisis situations—important by itself—has become especially significant today.

In assessing the Russian Federation's security interests in terms of constructive cooperation with the United States, one cannot but notice the real Russian security interests in the oceans. These interests are highly important not only in terms of purely military missions of protecting the USSR's sea borders and ensuring the survival of the naval component of the strategic nuclear forces. The normal functioning of the country's economy depends largely on the sea lines of communications between its eastern and western parts both through the North Sea and through the Indian and Pacific Oceans. The provision of the country with foodstuffs depends in a large measure on the oceanic fishing-fleet, operating in the various ocean regions.

The sphere of U.S.-Russian cooperative interests now has a tendency toward expansion. When identifying their coinciding and parallel interests and working out precise parameters of this cooperation, one should not ignore the experience of the comparatively remote past and not only that of the period of World War II, when the Soviet Union and the United States were real allies, but that of more historically distant periods.

One of these periods, for example, saw the dispatch of two military squadrons of the Russian Fleet under the command of Admirals Lesovsky (to New York) and Popov (to San Francisco) in 1863 during the Civil War. These squadrons represent obvious political support to President Lincoln in his struggle against the Confederacy.

At the same time they fulfilled the important military-political function of protecting Russia's interests of security and creating a threat to England's sea communications during a period of Anglo-Russian tensions. (During their stay in America the Russian combat ships even put pressure twice on the southerners' military vessels by the direct threat of military actions).

Cooperating During Gulf War

Of extreme importance for the future cooperative relations of security between the Russian Federation and the United States is the experience of their cooperation during the crisis in the Persian Gulf caused by Iraq's aggression against Kuwait. The former USSR and the United States turned out to be necessary for each other as partners in the settlement of the crisis. They demonstrated their ability to cooperate with each other in new conditions, first of all, in the framework of the UN Security Council.

At the same time there is a difference in the Russian and American positions which seems to be not only tactical and temporary. Russia is situated in the immediate proximity to the Moslem world, and thus the country possesses inherent traditions of constructive cultural and diplomatic cooperation with Islamic states, despite quite a few bloody conflicts and wars between orthodox Russia and a number of Moslem countries in the past.

The high level of Iraqi armament is a result of actions of a number of states as well as an effect of a prolonged confrontation with constant participation of both superpowers in the Middle East. One should not forget that the U.S. steadily sought to oust the USSR

from the Middle East, and accordingly the Soviet Union struggled to weaken U.S. influence in the region. Saddam Hussein profited rather cunningly by this competition.

Curbs on arms and military technologies supplies, enhancement of the non-proliferation regime on nuclear and mass destruction weapons, combatting terrorism (especially nuclear), security of principal international sea routes, and drug trafficking enforcement can be cited as main spheres of interaction on international security. All this should be realized primarily in terms of more profound cooperation on the settlement and/or prevention of international crisis situations. Both states have gathered substantial experience in cooperation on conflict and crisis situations. During those crises, the two countries on more than one occasion were close to the brink that separates the state of war from the state of peace. That experience, though rather peculiar, as it pertains mainly to the period of "cold war," must be taken into account in devising models and practice of interaction under new conditions.

Curbing Arms Suppliers

The problem of curbs on arms supplies of various regions is looming large. Regrettably, Soviet-American talks on those matters, begun in the late 1970s, did not continue, given general deterioration of U.S.-Soviet relations. Since that time, a number of new suppliers have moved visibly to the forefront in the world arms market. Moreover, Third World countries undertook the development of national defense industries. Thus joint Russian-American efforts in that area can be less productive in today's conditions than they could have been in the past. Still, these trends should not be used as an excuse for evading any substantial actions on the matter.

Any effective international mechanism in that sphere cannot be devised without Russian-American interaction. The Russian Federation and the United States should act as promoters of such a mechanism curbing and regulating arms supplies. The development of interaction between the Russian Federation and the United States in order to settle conflict and crisis situations, to stop proliferation of nuclear and chemical weapons, to regulate arms and military export channels is impossible without exchanges of data and assessments on a regular basis.

Needless to say, this matter is an especially delicate and sensitive one as evidenced in particular by the experience of a similar exchange of information between the allies during World War II, when they fought against a mutual enemy during several years. However, in the present context, such an exchange becomes an urgent necessity.

Consolidating the regime of nonproliferation of nuclear weapons and also setting up the regime of nonproliferation of ballistic missiles depend, to a certain degree, upon developments in the sphere of reduction of Russian-American nuclear weapons and on whether other nuclear states will be involved in this process. Slow progress in this matter serves at least as a strong argument, used by the Third World's representatives, to criticize the nonproliferation policy of the superpowers. The settlement of regional conflict and crisis situations, intensified by the threat of nuclear weapons proliferation, must be given top priority.

One must not also rule out the possibility that the development of the Russian-American political as well as economic relations will result in other forms of military

cooperation, such as joint work on certain types of exclusively defensive arms, contributing to the strengthening of strategic stability.

Military and political measures aimed at the promotion of international security are impossible without the participation of the naval forces of the states. At this point the proposal, made by the USSR during the period of the Iran-Iraqi war for forming a navy squadron under the UN flag to ensure the security of navigation in the Persian Gulf, is the most promising. At that time, the proposal did not meet support on the part of the U.S. and its allies, though it attracted attention of a number of prominent experts and politicians. The development of the Russian-American interaction in the naval sphere may evolve on the basis of mutual recognition that each of them has major security interests on the seas. While forming the new structure of the U.S.-Russian security relations, one should take into consideration both conflicts and differences which are always present in the relations between partners and are an integral part of any partnership.

Russian Federation Defense Science and Technology Policy

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One of the most important duties of the Ministry of Defense is to equip the Armed Forces with weapons and military equipment.

Any country trying to preserve its own independence will pay first priority attention to this matter. The whole history of mankind demonstrates examples of victories of those armies that possessed not only strong spirit and high-level military skills, but appropriate modern weapons as well. It goes without saying that quantity and quality of weapons determine methods and scale of combat actions. The foundation and development of national armed forces as well as measures aimed at supplying them with weapon systems, provide clear evidence that effective development of weapons is possible only when there is an appropriate defense acquisition management system at all phases of the procurement cycle.

The Defense Systems Agency of Russian Federation Armed Forces is the central body responsible for development, procurement and utilization of weapon systems and materiel, as well as for coordination of Ministry of Defense components activity.

Planning Evaluation

Until 1970, the development of new weapon systems as well as combat and support equipment was planned in accordance with separate government decisions and current annual and biennial research, development, test and evaluation plans. Some items of materiel were developed in compliance with five- seven- eight- and nine-year plans. All in all, up to 20 such plans were in action at a time. There was no uniform approach to the development of such plans and coordination of their tasks. Correlation with industrial capabilities was insufficient, and the required volume of budgeting remained undetermined.

Five-year and annual plans on full-rate production were developed and approved, but there were only annual plans for capital construction. Due to the different terms of development, there was poor correlation between engineering, full-rate production, and capital construction plans. This brought major disproportions in all spheres of weapon systems development and finally resulted in slow rates of armed forces modernization.

In 1970, the ministry made a transfer from the service-oriented, dispersed principle of weapon systems development planning to the uniform planning, programming and budgeting system. This decision was a brand new step in the improvement of control over the progress of weaponry development.

The nature and contents of planning have been changed dramatically. Planning has become:

- long-term, covering not less than a ten- to 15-year period;
- objective-oriented, directed to the most complete satisfaction of armed forces requirements and missions;
- comprehensive, covering the whole complex of weapon systems and all Ministry of Defense components;
- start-to-finish, covering all phases of acquisition life cycle.

Initial forms of complex perspective planning are:

- control figures of defense budget for ten years;
- main directions of armament development for 15 years, substantiating guide lines and tasks for armed forces weaponry development and the most important performance levels for weaponry types;
- ten-year armament programs containing enumeration of state plan tasks for research, development, test, evaluation and production of weapon systems, including volumes, time and cost of work.

The main functions of the Defense Systems Agency are:

- prioritizing research and delivery of weapon systems according to the interests of all Ministry of Defense components;
- optimization of budget distribution and material resources between Ministry of Defense components;
- elimination of duplication in industry performing orders for different Ministry of Defense components;
- revealing bottlenecks in development of the whole complex of weapon systems.

The problems of development and realization of unified defense technology policy received further consideration in weapon systems rationalization, standardization, and interoperability, in increasing their development and production quality in electronic and electrotechnic items production, as well as in the introduction of the newest scientific and technology achievements in weapon systems engineering and production. The problems of armaments development and delivery control, as well as industry mobilization preparedness were handled more effectively.

The development of the Main Directions and Weapons Acquisition Programs was based on the results of special research projects jointly carried out by Ministry of Defense agency and defense industry organizations.

Weapons Acquisition Programs

The Weapons Acquisition Programs for a ten-year period formed the basis of principal documents for the joint development by industry and Ministry of Defense of five-year and annual research, development, test and evaluation, production, procurement and facility capital construction plans. In accordance with approved Weapons Acquisition Programs and within the prescribed period of time, the following plans were developed:

- five-year major and principal research, development, test and evaluation, production and shipment of weapons systems, and capital construction plans;
- five-year defense research and exploratory development plans;

- annual production and supply of armaments and weapon systems plans;
- annual major research, development, test and evaluation (since 1987) and joint research, development, test and evaluation plans.

The Weapons Acquisition Programs enabled the industry to plan (12–15 years ahead) for the creation of new means of combat, determine the direction of the main efforts, and adopt the timely measures for balanced development of defense industries. Due to these programs, the successful rearmament of the Armed Forces was carried out in a short period of time. However, our experience shows that the development of the Weapons Acquisition Programs must be accompanied by serious, careful, and refined scientific support.

Today, the problem of determining the proper quantity of weapons and raising their quality has become the most important factor. It is also important to take into account the mutual influence of the principles of the art of war on one hand and of the planned directions of further weapons development on the other. For correct and full accounting of this influence, we must focus attention on the operation-strategic ideology of armament development, in other words on the system of scientific views and practical recommendations of operational-strategic (operational-tactical) character which determine the goals and the priority trends of weapon systems development.

Such operational-strategic factors must include:

- main provisions of military doctrine and defense science and technology, organically connected with weapon systems development;
- joint operational-strategic (operational-tactical) baseline data and requirements for weapon systems;
- the goal and the priority trends of their development.

The baseline data are necessary to solve purely technical problems with the help of a joint military-theoretical basis ("military background"). These baseline data should make it clear which country is the likely aggressor, the size of its armed forces, conditions of weaponry prospects for their development, its views on the character, terms, forms, and methods of commencement and conduct of war, probable theaters of war and their military-geographical and climatic conditions, as well as possible allies. First of all, the baseline data are necessary to assess the weapons of friendly troops (forces) and those of the enemy and not to admit its military-technology superiority.

The second group of data may include general mission areas of the armed forces as well as missions of operation-level war commands and tactical units which are to be fulfilled at the beginning and during hostilities. It may also include forms and methods of warfighting, space and time factors and their foreseeable changes in connection with possible fielding of new arms and equipment. This data group is directly connected with weapon systems development, since each piece of equipment is engineered to provide units with means of fulfilling specific combat tasks. It logically leads to the next part of the strategic-operational level of weapon systems development: strategic and tactical requirements which provide a more sound basis for identifying specific performance, weight and size characteristics of each item, taking into consideration the latest achievements of science and economics. Consequently, these weapon systems requirements are a synthesis of all control data elements and connect combat mission of forces with performance and type of each item.

Since each weapon system has its own distinctions in missions, design, and principles of action, requirements will be unique for each of them, especially in quantitative and qualitative areas. At the same time, they will have some common requirements which directly originate from existing and foreseeable political and military situations and possible character of war and warfighting environments. Such requirements for weapon systems may include:

- high operational availability;
- operational effectiveness;
- high-speed capability that means minimum reaction time;
- capability to forestall the enemy in opening fire, delivering a strike or performing other missions due to high level of automation;
- stable functioning in nuclear and electronic warfare environments, as well as in case of enemy use of "smart" and other special weapons;
- maneuverability and transportability;
- universality, ease of control, and convenience in use;
- low labor, production, storage, exploitation and maintenance costs, and maximum life cycle.

On this basis the final part of the strategic-operational ideology comprising the basis for validation of weapon systems development can be worked out, namely the main directions (priorities) of their development. Today, for example, these priorities may include:

- maintaining such a level for the whole of strategic weapons that provides strategic stability and deterrence for security of Russia and its allies. Simultaneously, providing a higher level of nuclear weapons safety is counted as important as insuring their survivability;
 - fielding highly effective Command, Control, Communication, Intelligence and Electronic Warfare systems to the armed forces of Russia and providing a higher level of combat capabilities and supportability;
 - fielding weapons and equipment to mobile forces which are capable of rapid maneuvering and fulfilling tasks in any region of Russia;
 - providing higher level of personal protection of soldiers in combat environment, improving their equipment and creating better conditions for crew performance.
- Naturally this approximate list of priorities can be specified with more details.

The development of effective weapon systems is traditionally the main content of the defense technology policy and includes a wide range of problems, starting with the determination of requirements for advanced weapon systems of the armed forces of Russia and ending with realization of acquisition programs. On the whole, as was mentioned above, the ways and means of solving this problem were optimally developed, practically confirmed, and have optimal scientific foundation.

Economic and Political Changes

However, the state of our economy today requires their correction in accordance with changes taking place in defense industry management system structure, unsuitability of the former legislative base to the modern political situation, appearance of different

property forms, and cooperation among industrial enterprises. That is why the development of a modern national defense acquisition management system, which would be adequate to the modern economic relations, is one of the most urgent directions of the defense technology policy.

Today, the Weapons Acquisition Program, annual Plans of Defense Systems Procurement and Research, Development Test and Evaluation are the main tools helping to bring out defense technology policy to life.

The Ministry of Defense of Russian Federation has developed the coordinated project of the Weapon Acquisition Program for 1993–2000, in which the reductions of the defense budget were taken into consideration, as well as difficulties originating in the dissolution of the Soviet Union.

The Weapons Acquisition Program forms the basis for development of procurement and acquisition lists and corresponding plans of the Ministry of Defense, including Procurement and Research, Development Test and Evaluation Plans, which could be used, when necessary, to correct long-range plans in accordance with real budgeting and the state of our economy.

Besides, the annual plans are operational means of implementing the defense technology policy. Thus, in 1993, in addition to the military and military-political expediency the Ministry of Defense was compelled to take into account purely technological aspects of industry, in which the termination of production process for a certain period could result in irreversible losses.

Defense Budget Decreases

Since the end of 1980s, the share of procurement appropriations in the defense budget has been constantly decreasing in favor of personnel and family housing appropriations. This trend, which we consider as a positive one, was accompanied by lower overall funding of the national defense and above all, research, development, test, evaluation and procurement. This process which started in 1988 turned into the avalanche-like reduction in 1992–1993. Let us compare the 1993 budget data with the similar data from 1991—the year when USSR ceased to exist.

Under the 1991 budget, the share of defense expenditures was approximately 35% whereas in 1993 it was reduced to 16.5%. Similarly, the research, development, test, evaluation and procurement funding was reduced almost twice as much, and now totals 25.5% as compared to about 50% in the 1991 Ministry of Defense budget. Here we must note that in fiscal year 1993 the share of U.S. outlays for procurement declined by 23.6% and that for research, development, test and evaluation is down 12.8%. These figures considerably exceed similar indicators of Russia's defense spending in 1993 which are 18.3% and 7.2% correspondingly.

At the same time, to our regret, the budget authorization is being appropriated irregularly and in small sums which, under conditions of galloping inflation, makes it quite difficult to plan weapons development and supply, especially for sophisticated and expensive weapon systems.

Besides, given the apportionment of Soviet property which followed the dissolution of the USSR, Russia lost a number of critical defense industries in Kazakhstan, Ukraine,

Belarus, Armenia and the Baltic republics. Among these are: the scientific/production center "Yuzhnoe" (in the city of Dnepropetrovsk), the Minsk plant, the Kremenchug automobile plant etc. Simultaneously, previous cooperative arrangements among weapons developers and manufacturers fell apart in a number of cases.

Taking into consideration all facts presented above, one should understand that our modern strategy of a long-term weapons development could only be fully implemented under conditions of a stable socio-economic situation in the country. That is why the major problem in the implementation of defense technology policy of the Ministry of Defense is the development of the key landmarks in the interest of making the right short-term decisions in real (crisis) financial-economic conditions. One has to take into account that the conditions of crisis management (planning) often require making decisions which not only fail to correspond to the rational strategy of long-term weapons development but may also run counter to it. In this respect, there emerges the need to increase the efficiency of procurement activity within the Ministry of Defense, specifically through strengthening the back ties between them and between industry and logistic support units of military districts and field forces.

Conversion of Defense Industry

These connections presuppose, in particular, a solution of such important defense technological problems as utilization of obsolete or surplus equipment in view of the armed forces' reduction in armament and equipment, as well as conversion of the defense industry, taking into account its specific character and high-level scientific and technological potential.

These objectives of the defense technology policy are to a considerable extent determined by the present conditions of development of Russia. The urgency for a solution to utilization problem results from the existence of large amounts of weapon systems and equipment destined for destruction under strategic and conventional arms limitation treaties, as well as those armaments which naturally became obsolete or surplus in view of the armed forces' reduction.

These items form a large aggregate raw material base. Integrating these resources in the national economy promises a considerable economic benefit, though it presupposes a large initial investment at the expense of the defense budget. But to this end, there must be established a proper system of utilization. In our opinion, such a system acting on a constant base must use research and development organizations of defense industry in order to develop secure and ecologically safe technologies for conversion of armament and equipment as well as to involve the defense industries into reconfiguration of defense items to meet the civil needs or process them into raw materials.

The entire solution of the problem of defense equipment utilization is one of the most important tasks of Russia's defense technology policy today, and it may assist in a more painless conversion of the defense production. Thus, while forming the approach to the Russian defense technology policy, one must take into account the state of the national economy and resulting state of the defense sector in particular. Today, it simultaneously combines a continuous crisis, and the growing strength of market relations.

Now it seems very important to resolve a complex of problems connected with research, development and production of weapon systems' logistical and financial support. This support must make the development and production of weapons profitable for industry.

In conclusion it is necessary to note that, under present conditions of the international situation, all the leading states of the world are correcting their defense technology policy. The common tendency is for the research and development of qualitatively new weapons with higher performance and supportability characteristics, and modernization of weapon systems and equipment already in operation. A similar tendency must also be followed in Russia. The Ministry of Defense of the Russian Federation believes that his task is a principal one at the present stage of the armed forces reform.

On Future Military-Technical Requirements

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Today's rapidly evolving technology has profound implications for future military requirements in a world undergoing extraordinary geopolitical/geostrategic change.

Technology is advancing so rapidly that military systems are often out-of-date by the time that the normal defense acquisition process leads to their deployment. The miniaturization of key components is making lightweight, powerful systems feasible for very low cost—revolutionary advances can be exploited for scientific, civil, commercial, and military purposes. The commercial marketplace and normal market pressures, rather than any military requirements process, now often determine the direction and pace of advance for key dual technologies that will create profound changes in how future military forces will equip, train and fight.

The fundamental geopolitical/geostrategic paradigm of the past 45 years has crumbled, but the successor post-Cold War paradigm remains unclear. Violent conflict in many areas of the world will be of international concern for years to come, against the ominous backdrop of proliferating weapons of mass destruction and their means of delivery. Diplomacy to counter such proliferation is appropriate, but clearly will be inadequate. Whatever may be our individual national objectives, a shared U.S.-Russian objective should be to establish a new policy framework to channel advancing technologies, thereby enhancing U.S.-Russian mutual security in an alliance context with other friends and allies, while countering unhelpful attributes of the proliferation of advanced technologies—especially as rogue or outlaw states seek to obtain weapons of mass destruction.

Policy notions that guided strategic thinking during the last 30 years need to be challenged and reformed, if not replaced, in the light of the perceived, however poorly, emerging post-Cold War geopolitical/geostrategic paradigm. Fundamentally, the United States and the states of the former Soviet Union now say that they seek cooperation, rather than confrontation, as an essential attribute of their relationship. If this is to be a serious objective, the relationship should be guided by the presumption that friends do not threaten each other. Continuing vestiges of the Cold War, based upon an adversarial relationship, can be counterproductive to efforts to confront new dangers together.

Not the least of the unhelpful legacies of the Cold War is the notion that one's society is most safe when totally vulnerable—and that total mutual vulnerability is at the essence of stability. This premise may have been academically appealing in rationalizing aspects of managing the past bipolar world order—although it was of dubious practical

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value in limiting the arms race or providing any real protection in crises that did occur. Surely, it will provide no protection in conflicts that may occur in the future wherein terrorist states or leaders may threaten regional and/or global stability from a geopolitical perspective. The Gulf War experience provided the world with graphic forewarning of problems of the emerging new world disorder.

Some Lessons from the Cold War

The world watched daily events of the Gulf War on CNN, itself an example of the profound, pervasive and now commonplace influence of modern technology on all aspects of everyone's life—particularly in democratic societies. We saw high technology systems employed by allied forces devastate Iraq's military forces while producing limited collateral damage and absorbing limited allied casualties. But reflection on lessons from the war suggests that future conflicts with more adept opponents may be far more difficult to manage.

To illustrate this point, consider the views of General Chuck Horner, Commander of Allied Air Forces in the Gulf War (including Patriot operations) and now Commander-in-Chief of US Space Command. His assessment of key contributions of space systems to Allied success in the Gulf War was presented to Congress on April 22, 1993 [1], and may be summarized as follows:

- The Defense Support Program (DSP), designed in the early 1970s for the Soviet threat, with unprecedented operational and system software modifications (made during the six-month build-up between Iraq's invasion of Kuwait in early August 1990 and outbreak of war in January 1991), provided timely warning information to Allied forces—including for Israeli civil defense. Superb performance was enabled by very favorable geographic, weather, and operational conditions. The U.S. is now seeking substantially improved capabilities via its Follow-on Early Warning System (FEWS).
- The Global Positioning System (GPS) provided most impressive navigational capabilities—delivering a revolutionary reduction in the usual "fog of war" by enabling allied aircraft, ground vehicles and soldiers to maneuver, engage, and evade with tremendous accuracy and efficiency. Graphic evidence of the growing overlap between the military and commercial sectors was presented by parents of American troops, who bought commercially available GPS receivers and sent them to their sons and daughters in the Gulf when government supplies ran short.
- Communication satellites were essential, of course—and not only military satellite systems. General Horner testified that his future architectures will plan to exploit commercial satellite communication systems.
- Satellite imagery provided urgent information on enemy strength and deployment. Multi-spectral imaging satellites, including Landsat and the French SPOT system, provided updated maps and helped tremendously in the planning and execution of General Schwarzkopf's famous "left-hook" maneuver into Iraq.
- Weather satellites provided important timely information to ground commanders throughout the conflict.

That all went well in employing the above critically important space systems was undoubtedly because of the six-month preparation time (which was extraordinary, in

itself) and the fact that allied space operations took place in a *de facto* sanctuary throughout the war. These points surely will not be lost on renegade leaders who may provoke future regional conflicts—and threaten the citizens of out-of-region states. Such renegade leaders may also be able to afford to take advantage of the same advancing technology to frustrate the tactics that were so successfully applied by the allied forces in the Gulf War.

For example, advancing technology is becoming much more widely available—enabling small, light-weight, very capable, and relatively inexpensive satellite systems which could be launched in a number of ways. U.S. Air Force Chief of Staff General Tony McPeak, who has referred to the Gulf War as the "first space war," has estimated that 30 nations may have some serious reconnaissance capability by the end of this decade [2]—and that could change the geostrategic situation in fundamental ways. Had Saddam Hussein such an operating capability during the Gulf War, the allied forces could not have maintained the crucial element of surprise—and the impressively successful, "left hook" ground force maneuver would not have been possible.

Any nation, or terrorist group for that matter, that can place such satellites weighing at least a few hundred pounds in orbit has the potential to threaten any point on the surface of the earth with nuclear attack within minutes. Therefore, effective ballistic missile defenses may soon be essential to maintaining regional and global stability and security in confronting these likely possibilities.

Indeed, the one area of allied weakness in the Gulf War noted by General Horner was in our ballistic missile defense (BMD) capabilities [3]. Patriot performed admirably, actually dealing with a threat that exceeded its design specifications from a technical-military perspective. Patriot was only upgraded to have a "self-defense" capability as the Gulf War became imminent; extending protection to civilian populations was never a part of its design requirements [4]. Patriot's primary contribution was "strategic" because it frustrated Saddam Hussein's strategy to draw Israel into the war and split the allied coalition arrayed against him. Hussein's strategy turned classical deterrence theory on its head—he did not fear retaliation; he attacked superior forces seeking to provoke retaliation. Notwithstanding this strategic success, the experience of the Gulf War made clear that much better BMD is required—especially if future conflicts involve weapons of mass destruction.

These facts of life in the new world disorder will pose major military and diplomatic challenges in the coming years. In particular, a serious debate over the important issue of "space control" is likely in the not too distant future—and the fallout from that debate will impact all space activities. While many will wish to focus on purely "peaceful" space applications, the reality is that space systems will be inseparable from other elements of modern military systems in the still dangerous world—a world in some ways more dangerous than during the coldest of the Cold War years. And the power provided by modern space technologies can be used for good or ill by an increasing number of powers around the world.

The technologies that performed so admirably in the Gulf War are 10-to-20 years old. Modern technologies would yield even more impressive results. Consider the advances of the past ten years, and in particular those fostered by the \$30-billion investment in the Strategic Defense Initiative (SDI).

Implications of Technological Advances of the Past Ten Years

A key baseline for evaluating the SDI technological advances [5] was the mid-1984 Homing Overlay Experiment (HOE), which exploited pre-SDI technologies. That proof-of-principle experiment involved an interceptor that was the size of a small automobile, weighing over a ton, launched from Kwajalein Atoll into the path of a Minuteman missile launched from Vandenberg AFB, California, some 9000 km up-range, and traveling at about 7 km/second above the earth's atmosphere when impact occurred [6]. An additional proof-of-principle using pre-SDI technology was the 1985 successful F-15 antisatellite test demonstration, which hit a dying satellite in low earth orbit—also traveling at about 7 km/second. A mid-term demonstration of SDI technologies was achieved in 1990 when the ERIS experiment repeated the HOE test in a more complex geometry and involving an interceptor of about 1/10 the mass of the HOE interceptor.

Today, far more capable interceptors, with 1/100 the mass of the HOE interceptor, are feasible and can fit on the front-end of a rocket that, for example, can be launched from vertical launch tubes of the Aegis Cruisers to intercept attacking ballistic missiles at ranges in excess of 1000 kms. Such a capability, which could provide protection over substantial land areas as well as the fleet, could be very important to the future security of the Middle Eastern, European and Pacific Rim regions—and could be purchased for about 1/10 of the \$40-billion already invested in Aegis. It would be a highly effective, flexible mobile capability that exploits an already existing logistics and operations infrastructure. Such interceptors obviously could also be land-, air- and space-based.

This same technology will revolutionize many systems, including space systems—and not only for military applications.

For example, Brilliant Pebbles was the most notable development of the SDI program, creating profound architectural improvements that went far beyond the space-based segment of systems considered by SDI over the past ten years. Although Brilliant Pebbles is not currently "politically correct," it was the most cost-effective, capable system conceived during the past ten years—and its architectural implications for future military systems in general are very important in any case.

Actually, Brilliant Pebbles satellites would be highly maneuverable, light weight, very capable space-based sensors—possible dual-use sensors that could accomplish all sorts of missions, including providing warning and attack assessment information (on the military side) and remote sensing and environmental monitoring data (on the civil/commercial side). They would weigh about 100 pounds, most of which would be fuel. (As sensors without sufficient fuel to maneuver and intercept missiles, they would weigh much less.) Because of its on-board inertial measurement unit and small, highly capable computers, each Brilliant Pebble satellite could do its own station keeping, and the constellation could do autonomous battle-management and coordinated defense planning without guidance from the ground except for an authorization order. Cost estimates were that the marginal 10-year life-cycle cost (for a constellation of about 1000 satellites) would be about \$3–\$5 million per satellite.

As noted earlier, Brilliant Pebbles as a defense system concept is on hold for political reasons. However, the technology that makes the Brilliant Pebbles concept feasible is

still being exploited for other purposes—including for civil and commercial applications—and continues to advance. For example:

- Ground-based interceptor systems, including for theater missile defense applications, are being developed in the context of the "open" global battle-management, command, control and communications architecture pioneered by Brilliant Pebbles. The pace of progress is limited by funding, not technology.

- Key technologies derived from these efforts are being included in a joint DOD-NASA deep-space demonstration experiment, CLEMENTINE. This \$50-million light-weight, deep-space mission will be flown about three years after its conception, and will space-qualify cutting edge electronics in the van Allen belt, orbit the moon, and fly-by an asteroid—taking multi-spectral data, some of which will be unprecedented.

- There are commercial interests in exploiting the inexpensive Brilliant Pebbles satellite designs and technology to support remote sensing and environmental monitoring requirements. WorldView Imaging Corporation in Livermore, California, backed by Silicon Valley venture capital, is planning to exploit these technologies to provide three-meter or better resolution imagery to customers within a couple of hours. These are the first commercial remote sensing satellites licensed by the U.S. Commerce Department under the Land Remote Sensing Act of 1992. The Commerce Department has approved WorldView's plan to fly in 1996 two satellites in sun synchronous polar orbits, providing revisit times of 1.5 to 2.5 days [7].

- The Brilliant Eyes space-based sensor system is exploiting many of the same technologies to enhance the capabilities of ground-based theater missile defense systems. It involves about 40 heavier (1000 instead of 100-pound) satellites in a higher altitude orbit than for Brilliant Pebbles, and, unlike Brilliant Pebbles, continues to enjoy considerable support.

Irrespective of SDI-related efforts, many of the same technologies are being exploited in purely commercial ventures, such as Motorola's Iridium and TRW's Odyssey satellite systems to provide global cellular telephone communications. And the U.S. Federal Communications Commission recently opened the door to commercial competition to produce an entirely new generation of communications services employing highly sophisticated pocket phones, palm sized computers, and laptops to send and receive video pictures essentially any place [8].

This technological revolution, expected in this decade—before the turn of the century, will dramatically alter military strategy and tactics. While they are not necessarily preeminent, many nations will exploit these technologies because they are available and affordable. Most of the technology is "on the shelf," and "how to" exploit the technology readily can be determined through university studies. This fact must be accounted in framing the post-Cold War geopolitical/geostrategic paradigm [9].

Possible International Cooperation

Instabilities associated with the growing availability of advanced technology might be significantly reduced if prior diplomatic opportunities are not allowed to expire unexploited. In particular, Russian President Boris Yeltsin, in his January 31, 1992, speech to the United Nations General Assembly, called for cooperation on building a

Global Protection System to protect the world community against ballistic missile attack [10]. He put this proposal forward in a multinational context to help counter the proliferation of weapons of mass destruction and their means of delivery—a continuing U.S. priority.

Yeltsin made this proposal at the same time that he proposed further START reductions (leading to START II later in 1992); so he made clear there need be no threat to arms control by building on his proposal. Indeed, Yeltsin's proposal for further reductions and cooperative efforts to deploy defenses to protect the world community is precisely the approach that the United States had advocated to the former Soviet Union for seven years in Geneva and at numerous Ministerials and Summits. Yeltsin's proposal was a historic shift from the contrary Soviet position that defenses were incompatible with reductions in offensive arms.

During 1992, some serious progress was made in working to build on Yeltsin's proposal—though not as much as was possible had the United States really focused on these issues. But priority was given to completing START II; and there was insufficient time also to complete an agreement on the Global Protection System. There is no doubt that much more progress was possible—and the Russians made very clear that they wished to continue to work toward this end regardless of who was elected President in November 1992.

A Joint Warning Center was favorably discussed by Presidents Bush and Yeltsin at their June 1992 Summit. Cooperation on ballistic missile defenses was also discussed in a number of high-level group meetings—always in the context of countering the proliferation of weapons of mass destruction and their means of delivery, and always in a multinational context. Although the intentions of the Clinton administration remain unclear, continuing talks between the United States and Russia clearly can complete the task of providing protection for America and our friends and allies around the world. And there is reason to believe such a possibility would be well received by friends and allies around the world [11]. (General Horner, among others, has spoken strongly in favor of sharing ballistic missile warning data among allies, along with a program of active defenses.)

The possibility of deploying defenses to counter possible ballistic missile threats to Europe from the Middle East has been under discussion for some time in NATO. More recently, the United States and Japan have begun actively to consider joint activities to offset the threat posed to Japan and the entire North East Asian region by North Korean ballistic missiles [12]. These discussions have compared how technologies developed by SDI might be exploited. Russia has been exploring the possibility of selling the SA-12 (or S-300V), which they claim to be superior to Patriot, to nations threatened by ballistic missile attack [13]. Such developments, which are entirely consistent with Boris Yeltsin's 1992 initiative, would help counter the proliferation of ballistic missiles—indeed, they would serve to deter proliferation because they would substantially reduce the value of ballistic missiles to proliferant nations.

A Global Protection System could be realized without compromising the sovereignty of member nations whose rights of self-defense must be guaranteed. It could consist of many systems and basing modes—depending on the interests and capabilities of participating nations. It would involve space-based sensors as a key element—but it would also include air-, sea-, and ground-based systems. Eventually, it should include

space-based interceptors as well—but, unfortunately, that is not in the cards at the present time, politically. Furthermore, political reality means that such a system would begin with theater missile defenses.

Theater missile defenses can provide protection to the homeland of the former Soviet Union and other friends and allies, but they cannot defend against long range, so-called strategic, missiles—a primary threat to the United States. A Global Protection System needs to include homeland defenses for all included nations, which will require changes to the ABM Treaty that governs only the actions of the United States and the successor states to the former Soviet Union. Such changes should be agreed as part of the discussions on a Global Protection System.

Concluding Comments

The bottom line is that theater missile defenses are politically viable—and efforts to cooperate on building a Global Protection System would be productive.

The worldwide advance of technology is inevitable, only the pace of the advance, which is faster than generally perceived, is uncertain. Coping with the proliferation problem will be a unifying objective for many who are seeking to cope with the realities of the post-Cold War world. It will be discussed in numerous future bilateral and multilateral fora. Such diplomatic efforts are important, but are not sufficient. Active measures, including missile defenses, are required to respond to this growing problem.

Perhaps of most importance to issues being considered at this conference, a Global Protection System could be supported by many nations around the world. A Joint Warning Center, as part of a Global Protection System, could be a fusion center for synthesizing information from space- and terrestrially-based sensors of many nations who were to join in such an alliance [14]. Based upon such warning, active defenses could be employed to protect the homeland of allies participating in the Global Protection System, as well as military forces deployed to counter renegade proliferant states, against missile attack.

U.S.-Russian cooperation in creating a Global Protection System can be a cornerstone of a post-Cold War paradigm designed to assure regional and global geopolitical stability in the new world disorder, which is likely to continue indefinitely. Hopefully, such a defense will be created before it is actually needed to counter some future outlaw nation/leader armed with weapons of mass destruction and the means to deliver them to great distances.

Notes

1. General Charles A. Horner, *Prepared Testimony to the Senate Armed Services Committee*, April 22, 1993.
2. General Merrill A. McPeak, "The Air Force Role in Space," *Presentation to the Ninth Space Symposium*, Colorado Springs, Colorado, April 15, 1993.
3. As reported in the February 11, 1991, issue of *Aviation Week & Space Technology*, General Horner, then Commander of the Allied Air Forces in the Gulf War, stated, "I underestimated the political impact of the Scud . . . a miscalculation . . . diffused only by the

success of the Patriot. . . . Patriot's success also has exposed a hole in the allied arsenal. Patriot is a point defense weapon; areas to be defended in Saudi Arabia are concentrated in a few small clusters. If the allied military targets had been spread out, there wouldn't be enough Patriots in the world to defend them all. . . . When very accurate warheads are available to Third World nations, the U.S. will need a regional, wide-area air defense force to duplicate on a grand scale the Patriot's pivotal role of defanging the Scud."

4. Notably, every Patriot fired in the Gulf War was produced after Iraq invaded Kuwait and before the PAC(2) modifications were fully tested. Software improvements were made, on the battlefield, to increase system effectiveness under conditions that exceeded Patriot's design specifications.

5. For a discussion of the accomplishments of the SDI program over the past ten years, see James A. Abrahamson and Henry F. Cooper, *What Did We Get For Our \$30-Billion Investment in SDI/BMD?*, A Report by Members of the International Study Group on Proliferation and Missile Defense, conducted under the auspices of the National Institute for Public Policy, September 1993.

6. Allegations in the *New York Times* that this test was rigged to deceive the former Soviet Union and Congress were bogus and no doubt politically motivated—obviously timed in late August to influence the September Congressional debate over next year's budget for ballistic missile defense. Former Defense Secretary Weinberger flatly denied the *Times'* allegations that he approved such a deception program; Major General Eugene Fox, the Army General in charge of the 1984 test, flatly denied that the test was rigged; and on September 9, Defense Secretary Les Aspin announced that the Clinton Administration's independent investigation determined that the test was not rigged.

7. The Space Marketplace Supplement to the June 25, 1993, *Aerospace Daily* includes a series of articles describing the issues being considered by the U.S. Government and industry regarding this global commercial marketplace—including one titled "Brilliant Pebbles Inspired First Commercial Sensing Venture."

8. See, for example, Cindy Skrzycki, "FCC Signals New Communications Era," *The Washington Post*, September 24, 1993, p. A1.

9. That the proliferation of these technologies is unlikely to be controlled in any meaningful way is the obvious conclusion that can be drawn from any number of public accounts of aspects of the problem. For example, recent articles include Neil Munso, "Pentagon Braces for New High Technology Threats," *Defense News*, September 6-12, 1993, p.3; Andy Paztor and John Fialka, "Export Controls on Computers To Be Relaxed," *The Wall Street Journal*, September 20, 1993; and Andrew Lawler, "U.S. Satellite Export Rules Eased," *Space News*, September 20-26, 1993, p. 4.

10. Notably, Yeltsin urged that "SDI be redirected to take advantage of Russian technology," clearly indicating his willingness to join with SDI—then already working on programs entirely consistent with his proposed Global Protection System.

11. Authoritative statements by senior European, Israeli, and Japanese officials, supporting a substantive future role for ballistic missile defenses, are discussed in depth in *Proliferation and Missile Defense: European-Allied and Israeli Perspectives*, a report by the International Study Group under the auspices of the National Institute for Public Policy, June 1993. Also, recent Russian views are summarized by Keith B. Payne, Linda H. Vlahos, and Willis A. Stanley in "Evolving Russian Views on Defense: An Opportunity for Cooperation," *Strategic Review*, Vol. XXI, No. 1, Winter 1993, pp. 61-72.

12. Formal discussions between the United States and Japan have been reported by, for example, David E. Sanger, "New Missile Defense in Japan Under Discussion With U.S.," *The*

New York Times, September 18, 1993, p. A1; and David E. Sanger, "U.S. Offers a Trade to Help Japan Build Missile Defense" *The New York Times*, September 23, 1993.

13. See, for example, Craig Covault, "Russian SA-12 Missiles Eyed For European ABM," *Aviation Week & Space Technology*, September 13, 1993, p.99.

14. The same information could also be synthesized to enhance our understanding of problems related to the environment and how they might be best addressed.

Russian Military and Technical Policy in the Field of Combat Aircraft R&D

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In the Cold War period, the Soviet combat aviation concept presupposed the possibility of a large-scale conflict with NATO countries. The scale of the conflict predetermined the mass character of the combat aviation fleet. The number of combat aircraft in all aviation categories exceeded 10,000 fixed-and rotary-wing aircraft. Combat aircraft not only formed part of the air force, but also of air defense fighter aviation, navy land-and sea-based aviation, as well as of army aviation (battlefield support aircraft and helicopters). Combat helicopters were used in border security forces and in the internal security troops, as well as in strategic and long-range aviation. That is an incomplete listing of arms and services where combat aircraft are used.

The mass character of the fleet predetermined the main concepts of its build-up. First of all, there was simplicity in the design and production technology to achieve cost effectiveness. Only tactical fighters were designed using concepts similar to the western ones, as illustrated by Mig-29 and Su-27 aircraft. All other categories of aircraft were intended for one particular mission, as for example, the air defense interceptors from Su-15 to MiG-31. Su-25 attack aircraft were designed for ground-target attacks in the battle area.

Tactical missile-carrying bombers of the Su-24 and Tu-22 types were designed only for air-to-surface missions. The concept of specialized aircraft Hence, design simplicity, low cost and advanced types constituted the basis for Soviet technical policy behind combat aviation build-up over the last 40 years.

Although the analysis of Western aviation and, above all, U.S. aviation influenced aircraft design, this was a secondary factor. The requirement of mass character and the objective of quick recovery of the fleet in case of damage during combat were the prime factors. Naturally, the scientific and technical capability of the aviation industry and development of necessary technologies were dictated by the above-mentioned mass character of the aircraft fleet.

Post-Cold War Policies

With the disintegration of the USSR and the end of the Cold War, scientific and technical policy in the field of combat aviation changed dramatically.

First of all, Russia could not afford such a large army. According to established standards, the numerical strength of the army must not exceed one percent of the country's population; the announced personnel strength of 1.5 million conforms to this

criterion. The manpower in aviation does not exceed 20–25 percent of the total army manpower. It is necessary to point out that in the Soviet army, this number never exceeded 12–15 percent. That is why the predicted manpower, needed for support of all types and categories of aircraft and helicopters, will not exceed 400,000. On the average, one aircraft is supported by 75–80 persons (with current maintenance systems). Thus, the total Russia aircraft fleet cannot exceed 5500–5700 aircraft. Combat aviation makes up at best 50–60 percent of total aviation. The remaining 40–50 percent accounts for support aviation, primarily for military personnel transport and equipment delivery both to the zone of conflict and directly to the battlefield. The increased role of combat and transport helicopters, reconnaissance aircraft, and AWACS aircraft should also be noted.

This increased role of various types and enhanced air mobility of Russian army is a direct consequence of new concepts of Russian military doctrine. Today, the main complement of the army cannot be deployed in border districts because the Russian border perimeter even exceeds that of the USSR, while army numerical strength is more than three times smaller. Therefore, it is impossible to spread the troops along the borders. Most likely, the army will be deployed in a limited number of military districts and in crisis situations, so that it can be quickly redeployed to the zone of conflict. This requires an air mobility concept as other kinds of delivery will not provide the necessary response time.

Consequently the increased percentage of support aircraft in the total fleet is quite justified. This tendency will expand, and the percentage for military aviation will decrease. The number of combat aircraft and helicopters performing the tasks of air superiority, battlefield interdiction, ground forces attack, airborne targets intercept, and participation in strategic triad will probably not exceed 2500–3000.

Impact on Combat Aircraft

These arithmetic arguments are, of course, very rough and point only to the potential quantitative level of combat aviation. The main conclusion is that Russia cannot afford to have a large fleet of combat aircraft, and, consequently, quantity must give way to quality. The requirements for combat aviation will drastically increase. A combat aircraft must be able to perform a large spectrum of various missions, that is, it must become multi-role. This multi-role capability is the only alternative to the highly specialized aircraft of the past and responds to the reduction in combat aircraft types.

Thus, Russian combat aviation must be highly effective and multi-role. Modern requirements for combat operations dictate round-the-clock, all-weather operational capabilities. Combat tactics have also radically changed. Stealth technology and advanced electronic countermeasures techniques have engendered new concepts of "search-and-track" and navigation/attack systems. Wide application of combat management systems based on global positioning systems, as well as joint combat operations involving large groups of aircraft, has complicated avionics systems. Undoubtedly, these considerations underlie the concept of modern combat aircraft quality and lead to considerable cost increase into aircraft production and operation. The advent of new types of stand-off, precision-guided weapons further complicates modern aircraft. Thus, aircraft technologies have become highly sophisticated in scientific terms. New materials and

alloys with enhanced mechanical properties, including non-metallic composites, are also coming into use in airframe structure.

The aerodynamics and controllability of the airframe must provide for high g-loads and maneuverability. Trends in thrust-to-weight and power-to-weight ratio increases require airframe-specific weight reductions, specific consumption reductions, and engine service life increases. These can be achieved only by further improvement of process stability in gas-dynamic passages, and combustion chamber and turbine blade temperature increases.

These changes raise problems of strength of high-temperature engine materials and new airframes development. "Search and track" systems, navigation attack systems, communication aids, digital control systems, and aircraft computer systems are based on the latest high-frequency and digital microelectronics, optronics and electronics achievements. Many other examples of state-of-the-art, scientifically sophisticated aircraft technologies providing high performance in modern combat aircraft can be given.

In addition, modern aircraft complexity and scientific sophistication predetermine factors in quantitative reduction. In the 1950–1960s, an aircraft plant could produce up to 600 MiG-21-type aircraft per year while in the 1970s, it could produce 300 MiG-23-type aircraft per year. Today, yearly output does not exceed several dozen aircraft. Thus constraints on both Russian army personnel strength and modern aircraft technology preclude a large fleet of modern aircraft.

As for type, the MiG-29 and Su-27 front-line fighter series will most likely be continued. These will be the so-called fifth-generation combat aircraft with new technologies in all their components. In the long-term, replacement of the Su-24 and Tu-22 by a multi-role bomber with enhanced combat potential is envisaged. One model will be chosen between the two currently available Mi-28 and single-seat Ka-50 helicopters. The civil Mi-38 helicopter now under production will probably have a military transport variant. Production of strategic aircraft has ceased by the President's decision. The Il-76, an excellent military transport aircraft that is operational with military-transport aviation and airborne troops, has an advanced variant with increased lifting power and range. Production of strategic aircraft has ceased by the President's decision.

Thus, the number of types of Russian military aircraft has been dramatically reduced. Russia has also inherited a rather obsolete Soviet military aviation fleet, since the latest types of aircraft were located at airfields presently situated on the territory of other CIS countries. This is why aircraft fleet renewal is an urgent task for the Russian army. Besides, as a result of the disintegration of the USSR, Russia was left without most of its first-rate airfield equipment, target ranges, storage areas, and other support system components, including navigational, control and communication facilities. But the main concern is preservation of the aviation industry in Russia.

Economic Crisis and Budget Cuts

At present, Russia is experiencing hard times. The disintegration of the USSR and disruption of the centralized economic system have brought economic crisis and drastic state budget cuts, including reductions in the military budget. Consequently, an especially

difficult situation has arisen in implementing certain R&D programs dedicated to new aviation systems and to elaboration of aerospace technologies.

The USSR had both military and commercial (civil) technological bases. Leading military technologies had played the role of locomotives in the civil sector of economy. Production of combat aircraft in the USSR has actually created a variety of branches of industry, such as non-ferrous light-alloy metallurgy, civil aviation, rocket manufacturing, cosmonautics, power engineering and precision instruments production.

The country's present budget prevents Russia from maintaining those two technological bases. Because of drastic reduction in the military product share in production, that is not even necessary. The leading role now passes to civil sector. It is necessary to combine the military and commercial (civil) technologies into a single national technological base. In aviation, this process has already started, since a federal program for development of civil aviation has been created and financed by the government.

It is well known that much of Russia's territory especially its northern and eastern zones, lacks developed transport systems. It is precisely in these zones that the richest mineral resources of the country are concentrated. Thus, the future of Russia and its place in the global economy will be determined by success in the economic development of these zones. Natural conditions there are such that, of all the kinds of transport, only the serial component has prospects for wide employment. Therefore, Russia is "doomed" to be a great aviation power and to develop aeronautical or, more accurately aerospace technologies, because modern air transport is unthinkable without wide application of satellite communication, navigation and meteorological service facilities, and space-based air and ground surveillance systems.

Cooperation with United States

It is because of this prospect that the aviation industry looks at the future with optimism in spite of the present complicated economic situation. The sphere of aerospace technologies provides a good foundation for close scientific, technical and economic cooperation between our countries. Here, interests of Russia and the United States coincide in developing new air routes from North America to the countries of Asia. The shortest routes pass through Russia, thereby saving aviation fuel. Development of the Pacific region air space to straighten airways requires creation of a single global air traffic control system for this area based on satellite communication and navigation systems. As the two leading aerospace powers, Russia and the United States can confidently solve this problem by unifying our efforts. Our cooperation in the field of aviation technologies has already started. Joint development of IL-96M aircraft with leading US companies (Pratt & Whitney, Rockwell-Collins, and eleven subcontractors) serves as an inspiring example. New contacts are being established with Boeing, Honeywell, Allied-Signal and other companies working in the sphere of avionics and aviation technology. We also cooperate with Hughes and Westinghouse in the field of air traffic control.

How Russia's Defense Industry Responds to Military-Technical Policy

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The formation of the Russian State urgently requires a new approach to the tasks of the State in the sphere of maintaining security and developing ways for its complex resolution.

The answer to these questions should be provided by a National Security Concept for Russia which is currently being developed. This document should: (1) define the vital interests of individuals, society and the state; (2) introduce into this a definition of security, linking into a single whole, the political, economic, military, social, demographic and ecological aspects of security; (3) maintain a list of threats; and (4) define the forms, types and means of ensuring security, taking into account the real capabilities of the state.

Russian military doctrine, which has been developing for a sufficiently long time, but which has not yet been completed, should naturally flow from the Security Concept.

The basic feature of the military doctrine under development is its de-ideologization. Russia does not consider any one state as an enemy. It gives priority to political methods of resolving interstate conflicts. The military-political situation in the world is characterized by a lowering of the real danger of the unleashing of nuclear and conventional world war. At the same time, there still exist, and in many regions are intensified, political, economic, territorial, religious, ethnic and other contradictions, which can lead to armed conflict and local wars, directly affecting the Russian security interests. These threats are aggravated by problems of the proliferation of nuclear weapons and the beginning of spontaneous changes in the geopolitical situation, arising from the collapse of the USSR and the destruction of the system of the balance of forces and interests, grouped earlier around the dominant opponents: the USSR and the United States.

Defense construction in Russia will be carried out on the basis of the principle of reasonable sufficiency for defense. In connection with this, the structure of the Armed Forces, the deployment of units and formations, the quality and quantity of armaments should allow us to prevent and repulse aggression, but not create a threat to the security of the other side. This principle more fully meets the security interests of Russia, as it allows us to maintain capabilities for effective deterrence of aggression at the lowest level of expenditures.

Strategic Stability

Strategic stability is a powerful instrument in maintaining security and is a necessary condition for its realization.

Broadly speaking, strategic stability is understood as a condition of military-political relations between countries, characterized by the resistance to destabilizing factors, a situation where neither side is motivated to change the correlation of forces or to initiate military actions. Strategic stability is maintained if conditions are created where any preventive actions taken by any one of the sides cannot lead to causing it disproportionate material losses.

Strategic stability in the sphere of strategic nuclear weapons is maintained on the basis of capabilities for mutual deterrence of nuclear strikes through the threat of inflicting unacceptable damage by retaliatory actions, and in the sphere of conventional weapons, on maintaining capabilities to parry attempts by anyone to achieve superiority in men and materiel, at a level needed for initiating effective offensive operations.

Strategic stability is based, above all, on the realization that in conditions of nuclear realities, security can only be general (in nuclear war there can be no victors), and attempts to achieve unilateral military superiority damaging to the security of another side undermine general security and consequently, the security of each side. Today, at the base of military-technical policy of each state, should lie mutual security, based on mutual deterrence, mutual trust and mutual control.

Strategic stability does not assume precise or even close equality of strategic forces; it allows for differences in their structure, levels and quality, but under conditions that they ensure the ability to implement (under any real scenarios of armed conflict) retaliatory responses with the necessary effectiveness.

Military planning based on the principles of reasonable sufficiency for defense considers such an important factor as the steadiness of strategic stability in the face of varying disruptive factors and should preserve the ability of groupings, programs and plans for the development of weapons to adapt to changes in the correlation of forces of the sides, which can be caused, for example by deliberate, ill-intentioned or non-optimal actions or scientific-technical breakthroughs.

It is advantageous to support the condition of stability (with the necessary margin of stability) at a lower level of strategic means, and the maximum margin of strategic stability is to have equality of force. However, when implementing the principle of sufficiency for defense, mechanical equality cannot be an end in itself.

The question of qualitative improvement of armaments merits special discussion. In our view, this is clearly one of the key issues in the long-term course of building world security.

To a significant degree, decisive steps to date have been taken toward the realization of quantitative limitation of weapons, but little has been done toward reaching international guarantees on preventing the transition of the quantitative arms race into the qualitative sphere.

One hears frequently the opinion that it is impossible to stop scientific-technical progress. The question rather is to develop such measures that would prevent the use of scientific-technical achievements for purposes incompatible with the desires of the sides

to build a safe world while reducing military expenditures, and would not undermine the basis of stability.

Let us recall the history of how the ICBMs became a destabilizing factor. In the USSR, the development of ICBMs with multiple independently targeted warheads (SS-16, SS-17, and SS-18) had begun at the end of the 1960s in response to the creation of the American Minuteman-III and Poseidon C3 missiles, and also to the program to create an ABM system on U.S. territory ("Safeguard"). These ICBMs were deployed beginning in the mid-1970s. The high protection factor of silos ensured a sufficiently high degree of survivability. Ground-based ICBM groupings remained the main potential for deterrence and the preservation of strategic stability right up until the beginning of the 1990s.

During this period of time, the ABM Treaty and the SALT I and SALT II Treaties were concluded. Although the SALT II Treaty was not ratified, it was in fact implemented. The quantitative levels of U.S. ICBMs and SLBMs remained practically unchanged. Nevertheless MIRVed ICBMs, and primarily heavy ICBMs, were seen as destabilizing due to their low survivability. ICBMs with MIRVed warheads became a threat to peace because of the sharp increase in offensive capabilities of the U.S. ballistic missiles, due to the leap (almost double) in increasing the accuracy of the strikes.

It appears to us that this is a clear example of the destabilizing influence of qualitative improvements in weapons, in which the increase in the accuracy of strategic offensive weapons added nothing to the effectiveness of retaliatory strikes.

The race in the quality of armaments contradicts the defensive doctrine and mutual security, but to a definite degree, it is inevitable and, clearly, cannot be fully neutralized. However, through coordinated actions of the sides, it can and should be directed towards satisfying the demands of a defensive doctrine.

An essential condition for this is the readiness of all sides to build a system of collective security on the principles of defense sufficiency. It would be correct to try for a situation where each time that a decision is taken on whether to develop some new weapon, or whether to retain an existing weapon, it should be determined, first and foremost, not by whether it is more effective in offense or defense in comparison with other weapons, but whether its contributions are negative or positive in terms of strengthening strategic stability and consequently also collective security.

We see several possible directions for the development of weapons, requiring a general understanding of their place and role in the system of collective security, their influence on strategic stability, and the development of a complex of limiting measures. It would be expedient to develop a common position in relation to BMD systems on national territories, high-precision long-range conventional weapons capable of achieving the objectives of nuclear deterrent weapons, means for detecting and tracking mobile missiles and nuclear submarines, and a global system of ASW defense.

In order that the position of the sides should be coordinated and in order for this process to be sufficiently intensive, joint work must be conducted by military experts, technical specialists, scientists and diplomats of Russia and the United States. Such work should be organized within the framework of a Russian-American consultations on strategic stability.

Regretfully, in recent times, we have been too preoccupied with the political side of the disarmament process, forgetting its technical essence, the presence and content of military-technical problems, resulting from one or other agreements which are profoundly

tioned to immediate political interests, thus threatening to give rise to the spread of mistrust and to wreck the positive efforts of the last decade.

START II Provisions

In this connection, I would like to analyze several provisions of the START II Treaty and their influence on Russia's military-technical policy.

The basis of strategic nuclear forces of our country has always consisted of the ground-based ICBMs. This was determined not only by well known geostrategic features of Russia, but also by the evidently displayed tendencies in the development of armaments, under which SSBNs increasingly became one of the main forms of destabilizing armaments. These factors include: concentration of great numbers of nuclear warheads on one carrier; the significant time they spend in bases; their highly effective offensive potential (high accuracy in strikes with short flight times, launching ballistic missiles "bypassing" the missile attack warning system, the difficulty in identifying the aggressor-country); military patrol outside national territory; low survivability in conditions of a protracted nonnuclear conflict; and peculiarities of command and control which aggravate the threat of accidental and unsanctioned launches.

Mutual maintenance of the nuclear arsenals needed for deterrence under absolute reductions to minimal expenditures has been, and is in the interests of Russia.

The planning of scientific-technical and experimental-design work was oriented so that under conditions of progressive reductions of the nuclear arsenals (primarily warheads), at a given stage in the development of deterrence, the potential force would be made up of mobile missile complexes equipped with both single warheads and MIRVs. In the long term, these could be supplemented either by fixed missiles with MIRVs (if work being conducted in improving their survivability had achieved acceptable results based on the criteria of "effectiveness in a retaliatory strike-cost"), or sufficiently impressive, fixed single warhead complexes which would have smoothly replaced the existing powerful ICBMs of the previous generations.

The START II Treaty poses for Russia additional serious problems in fulfilling its half of the obligations for maintaining strategic stability. The time for implementing the Treaty (2003), and also the provision on banning ICBMs with MIRVs, and primarily mobiles ones (whose stabilizing role no one would call into question) predetermine the need for replacement of 40–70 percent of the existing ICBMs. Under the START II Treaty, the U.S. does not have this problem.

The situation is further complicated by the unwarranted tight restrictions on the ability to reconfigure MIRVed missile complexes with single warheads, and also on the use of existing silos for ICBMs carrying single warheads.

It is no secret that today in Russia, a strong mood prevails demanding partial reworking of the Treaty before its ratification. In the first place, this concerns lowering the general levels of warheads to 2000–2500 units and even lower, extending the term of its implementation to 2005–2007, and developing additional measures for preventing circumvention of the Treaty.

Russia today expects a show of restraint from its Western partners in military and military-technical policy, and a continuation of constructive, engaged dialogue on all complex questions of mutual security.

Defense Conversion

Radical political and economic reforms, which are being carried out in Russia, are accompanied by a significant decline in the economy. And obviously, it is inevitable that the defense industry, which for the last decade has been unjustifiably growing, will now experience the greatest difficulties.

Conversion of the defense industry has recently become an objective necessity and one of the most important economic preconditions for the survival and further progress of our state.

Under these conditions, the Russian defense industry, making full use of its developed scientific-technical potential for resolving national economic tasks, must:

- ensure the current requirements of the Armed Forces in armaments and military technology at the level of minimal defense sufficiency,
- preserve the scientific-technical and industrial potential of the country to be able to adequately respond to possible changes in the military-political situation and technical and technological breakthroughs; and
- maintain the ability to prevent potential attempts by any state to achieve strategic superiority.

The resolution of these tasks is taking place under conditions of deep reductions in financing of defense orders, due to the difficult economic situation in the country. In 1992 the share of military production in the total volume of output of the defense complex amounted to only about 20%, whereas in 1990, it was 50%.

Last year we in the defense industry have been able to stabilize the output of the civilian production; however, the necessary effect of conversion of the defense industry has not yet been felt. Enterprises, oriented basically toward carrying out defense orders, remain in a difficult financial situation. In 1992 the level of defense orders decreased by 68% in comparison with 1991 levels; and in the first half of 1993 defense enterprises failed to receive about 450 billion rubles that had been promised. By comparison, in the U.S., the annual reduction in defense orders did not exceed 5-10%, and unpaid funds can be recovered through the courts.

Today many defense enterprises are working less than a full work week, wages are half the national average, and clarity in long-term perspective is absent. Defense orders are becoming economically less advantageous than switching to output of other products, despite the difficulty of technological re-equipping of enterprises; in some cases, it is becoming simply unprofitable. The matter is complicated by the absence of long-range military-technical policy and extremely poorly functioning mechanisms for financing defense orders.

A tendency is appearing of spontaneous "flight" from defense orders, affecting the manufacturing, scientific research and experimental bases, which directly determine the defense potential of Russia. The question of preserving the high technology potential of

the defense industry, which could be used for both military and civilian production, stands sharply before us.

To correct or even stabilize the enterprises by means of financial support on the principle of equal assistance for all will not work. Serious structural changes in the defense complex are essential and should be directed by the priorities of long-term Russian military-technical policy. Similarly measures should be taken to stimulate the diversification of industries of the defense complex aimed at both military output and high technology forms of civilian production, including dual use technologies. An important condition for "launching" these processes under the motivation of market mechanisms is a restructuring of the property status for a significant number of defense enterprises.

In our opinion, the following scheme can be realized. First of all in the military-industrial complex, we must identify the core of state enterprises which possess key technologies for the production of armaments and military production, essential for realizing the new military doctrine of Russia. By our accounting, the number of such enterprises is about 300. For the significant number of remaining enterprises, we must gradually implement a program of privatization, creating joint stock companies, with a portion of the stock held by the state. And finally, we must release on the free market the remaining parts of industry, which, of course, would retain the right to work on defense orders.

The development and realization of a long-term military-technical policy will be built on the basis of the laws of the Russian Federation, which will define the legal relationship among the organs of state power and administration, the procurement ministries and departments, and the defense scientific-production complex and organizations and enterprises engaged in implementing the process of justification, planning and realization of the tasks of conducting research, development and mass production of armaments.

The defense scientific-industrial complex will realize the long-term military-technical strategy of Russia and will continue to search for ways to further reduce military expenditures, and to integrate military and civilian sectors of the economy and the effective utilization of state means and resources to achieve:

- optimal administration of activities in scientific research, project construction and manufacturing enterprises as a single functionally-oriented scientific-industrial complex;
- perfection of work structures and organizations in the defense scientific-technical complex, and progressive introduction of effective methods of economic management;
- creation of an effective system for maneuvering allocated funds and resources, utilization of high technology potential of the defense industry for development and manufacture of science-intensive economic production, and orientation toward the development of dual use technologies, transferring high technology into the civilian economy and effective export policy;
- development and realization of an effective investment policy in the military-industrial complex and associated sectors; and
- implementation of a policy of military-technical cooperation with near and far abroad countries, promotion of national products in high technology and arms markets.

The Russian Federation Committee on Defense Industries is involved in the organization of activities in the industrial defense sector. Important principles of

organizing the production of weapons and military technology for state needs, of resolving tasks of defense industrial conversion and increasing the economic effectiveness of the defense complex as a whole include:

- a systematic implementation of scientific research by ministries and departments placing orders, branches of industry, and the Academy of Sciences and Higher Schools of Complex Scientific Research in determining perspectives on the development of weapons and military technology for 10–15 years with the objective of justifying proposals for long-term programs of research, development and work production of armaments, making recommendations for preparation (retooling) of industrial enterprises for production, and also justification of needed allocations and material-technical resources;
- the formation and approval of the planned figures of defense expenditures for the next 10–15 years and the defense budget for the next plan year, optimal distribution of allocated resources and timely information tasks (state orders) by industries and executive agencies;
- centralized supplying of protection by industrial and executive agencies through appropriate organs of branch management—providing industrial ministries with the necessary financing and material-technical resources for specific projects, primarily for conducting basic, exploratory and applied scientific research, the development of laboratory research, experimental and project construction and technology manufacturing base; and
- implementing state measures for guaranteeing protection in the budget system of items of expenditure for realizing military-technical policy, and also implementing financial-economic measures for preserving advantages and priorities for fulfilling tasks in development and manufacture of weapons and military technology for state needs.

For a long time in our country, development and manufacturing of new types of armaments were considered the main tasks of defense industry. The system of assessing the effectiveness of scientific research and project organization was aimed at this. The basic indicators were the number of types of weapons which were deployed. The system encompassed both customers (Ministry of Defense) as well as the industry, and was solely based on the deployment of a weapon. A similar practice led to the growth of allocation, increasing the number of projects and expansion of prototypes, simultaneously found in armaments.

At this time, a similar practice is completely excluded. The matter is not simply a sharp decline in financing, but changes in the orientation of tasks of defense industry in accordance with the demands of minimal defense sufficiency. The basic feature of this approach is adaptation to possible changes in the military-political situation, including programs and plans for development of armaments of foreign countries and parrying anticipated scientific-technical breakthroughs. This presupposes reconsidering the approach to the solution of the question of the adaptation of new weapons systems and shifting the emphasis in Russian military policy to scientific-technical work directed at maintaining strategic stability.

The conversion of the defense industry in Russia, in its scale and scope, has no analogy in world practice. Currently more than 1500 industrial enterprises and scientific organizations have been drawn into the conversion process. But the scope of the process still does not guarantee significant results. At the beginning, conversion will be

expensive, while the results of measures we have taken can only be seen in two to three years.

Priority directions of civilian production of goods by converted capacities have been determined. Included in this are: the development of civilian aviation technologies, means of communication and information, electronics, the rebirth of the Russian fleet, manufacture of equipment for the fuel and energy sector, processing sectors of the agrarian-industrial complex, light industry, food, public food services and distribution of new types of medical technologies, development of manufacturing and satisfying the market for high-quality durable goods.

Defense enterprises have the right to independently develop programs for their conversion. An entire spectrum of measures of state support for such programs is being considered, including state subsidies granted to converting enterprises and preferential credits for this purpose. State support will be implemented on a competitive basis, arising from specific conversion programs of general state requirements and priorities of economic development, and also the abilities of the industries to repay state credits.

Results of Conversion

We expect that conversion programs will give Russia high-quality scientific and technical products. In particular, this will include a new generation of civilian aircraft, such as the Il-96-300, Tu-204, Il-114, Tu-334, An-74. Already, in this year, over 500 airplanes have been produced (half of them are of a new type, in accordance with world standard flight technologies); over 370 transport, fishing and auxiliary ships and flotation devices for sea and river fleets have been built. In 1993-1995, defense conversion will provide additional capability for the manufacture of 1,300,000 electric and gas stoves, 500,000 washing machines, one million refrigerators and other goods. An important result of conversion will be the provision to the oil extracting sector, to a significant degree, with domestically produced equipment instead of our earlier reliance on imports, and also new technology for reopening closed oil wells.

There are many problems in implementing external economic activities of the defense sector. Russia possesses today a huge capability for exporting armaments and is ready today to sell various weapons for the sum of \$20 billion. We take the position that today manufacturers and developers must be deeply involved in this process, giving them the necessary independence for concluding direct contracts with customers under strict observance of the export control regime and international obligations of Russia and the interests of military and economic security. Such a course will enable not only the preservation of technologies needed for the country's defense capabilities but also effective use of financial means received for re-tooling production.

In resolving tasks of restructuring the economy, we are relying primarily on our own capabilities. At the same time Russia is interested in cooperation with the U.S. and other highly developed countries in the sphere of high technology, including dual use technologies. Such cooperation, in our view, would allow more effective use of the technological culture and intellectual potential of the defense sectors in the interests of both states.

A basic obstacle to such cooperation is the discriminatory restrictions put in place at one time by the COCOM countries in relation to the USSR and automatically transferred to Russia. Definite work in this sphere is being conducted within the COCOM forum. However, this question is gaining an ever more significant political cast. It is becoming an indicator of the sincerity of the intentions of the sides and their correspondence with the declared state of Russian-American relations, and it demands immediate resolution.

The resolution of the problem of nonproliferation of weapons of mass destruction and their delivery means, and military technologies is of great significance for the strengthening of international security. Russia will unconditionally fulfill its obligations. However, it is now necessary to consider that the international political climate will define questions, which earlier were in the shadows of the Russian-American confrontation, primarily questions of national consciousness and national economic interests. Already, today, voices are being raised about inequality and technological and economic protectionism, due to the nonproliferation regime. It is impossible to wait until such tendencies gain strength. The viability and effectiveness of nonproliferation regimes will be dependent upon how harmoniously they will be combined with the interests of international security and national development and the striving of states to mutually advantageous economic cooperation. Successful resolution of these questions demands close cooperation between Russia and the United States, the two countries which possess the greatest military-technical potential.

Yet another factor restraining the development of wide economic cooperation of Russia with Western countries, according to many executives, with whom I have spoken recently, is the economic risk of financial investments in the economy of our country. It would be naive on my part to say that there are no such risks, although in Russia it is said, "He who takes no risks, drinks not champagne!"

I would like to draw your attention to the fact that Russia possesses a highly developed scientific and potential scientific-technical achievements, in which our Western partners can be interested. Here today can be found mutually beneficial forms of cooperation with minimal technical and economic risks for our partners.

Work is already underway in some of these areas. As an example, I would like to mention the project of using the rocket motor, RD-180 for modernization of Atlas missiles developed by General Dynamics. Cooperation assumes the conclusion of a contract on joint work between NPO Energomash and Pratt Whitney, certified and manufactured by the Russian partners, and its sale to General Dynamics. Currently it demands only approval of the contract by the American government. Other examples include a contract for the construction of flight-tested ejection seat systems between Rockwell—on orders to the U.S. Air Force and Navy—and the machine building factory, "Zvezda," and the launch by the three-stage "Proton" rocket of the Iridium communication satellite for Motorola.

A new field of mutually beneficial cooperation for conversion can open the results of scientific-technical research, completed in the interests of fulfilling defense tasks. Cooperation in nuclear space energy can serve as an example of such work. The "Topaz" reactor is a clear example of dual use technology. The lifting of constraints on the commercial use of this technology would facilitate the maintenance of the positions on the use of space for military purposes, which was affirmed, in particular, in the 1972 ABM Treaty and in the SALT I and SALT II Treaties.

Well-considered actions on both sides, strengthening mutual obligations in the military sphere, further steps to strengthening strategic stability, preventing the shifting of the arms race to the qualitative sphere would create the necessary conditions for significant expansion of mutually advantageous cooperation. Russia and the Russian defense industry is open for mutually beneficial cooperation on an equivalent basis. The Committee on Defense Industries is ready to provide wide-ranging assistance to such a process.

Russian Defense Industry Policy: Military, Technical and Foreign Economic Issues

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Defense Transition

The new Russia is making the transition to a dynamic market economy, which will work for the needs of the people and will be freed from the distortions of militarization and open for mutually beneficial business cooperation within the context of the world community. The general course of these structural transformations, taking into account the priorities of social-economic development of the country and the demands of preserving its security, will include deep reform of the defense industry.

Russia inherited three-quarters of Soviet defense-industrial potential, which had been created to preserve military parity under conditions of global confrontation and which possessed a high technology level that now exceeds defense production. This consists of more than 2000 enterprises, scientific and construction organizations, where, in all, about 5 million people are employed and 8% of the industrial output of the country is produced.

The Russian defense complex includes aviation, shipbuilding and missile space industries, radio industry, and also sectors for manufacturing weapons, ammunition and special chemicals, communications equipment and electronics. Since October of last year, these activities have been regulated and coordinated by the Russian Federation Committee on Defense Industries.

In essence, these sectors have always been multi-faceted. Apart from defense they have traditionally taken on significant and constantly increasing civilian "load," which, prior to large-scale conversion, constituted more than 40% of their total volume of production; now they have reached the 75% level.

In the course of 1992, defense orders were sharply reduced (by more than two-thirds) without prior notification to the enterprises and organizations. Realistically assessing the country's economic capabilities of the country, we cannot expect any real growth in defense orders in the future, compared to current levels. Given no unforeseen aggravation of the military-political situation in the world affecting Russia, the economy will scarcely enable us to earmark more than 5.5-6% of its gross national product for the requirements of defense up to the year 2000. Taking into account the increased share of expenditures in the defense budget for the social needs of servicemen and maintaining the Russian Federation Armed Forces, this means that, regardless of the details of the military doctrine, defense orders, at least in 1994-1995 - and possibly to the end of the century - will not exceed 25-30% of the 1989-1990 levels.

Currently, the level of defense orders will not warrant supporting defense production at all enterprises in the defense complex and calls for the necessity of redistributing their

workloads—with a concentration of work at some and rationally decreasing at others, including freeing some of them for complete retooling.

The creation of new or modernizing existing defense industrial capabilities and facilities of the scientific base, developing them so that they can work on specific tasks, will be accomplished in the future in accordance with long-term programs with special financing through state orders (directly or in relation to payments for the price of the product), through acceleration of amortization, and—in some cases—through certain incentives for attracting credits on the proper technical-economic basis of demands.

The approaches to supporting mobilization readiness are changing. Instead of reliance on increasing output of already assimilated and obsolete technologies, this approach demands planning a permanent renewal of output of developed technologies through corresponding financing of experimental-design work, testing and full preparation for production without producing goods in series or with the production of small lots and their experimental assimilation into the forces. The level of this work and measures also will be commensurate with real financial capabilities of corresponding state customers.

The entry of the defense complex into a market economy is accompanied by extensive restructuring of its property structure. By keeping only a limited number of key enterprises and scientific centers in the hands of the state, the process of mass privatization will gather momentum. Already, in the defense sectors, we can count more than 300 privatized industrial enterprises; by the end of the current year, this number will reach 550, and in 1995 the prognosis is for almost 1400 enterprises to be privatized.

Meanwhile, the new economic situation is increasing familiarization, with workable organizational-legal forms of operating enterprises—manufacturing corporations, associations based on technological principles, holdings, and financial-industrial groups. In work on state requirements, primarily defense, it will be necessary to shift to a developed system of long-term contracts, suitable to the new conditions and ensuring the economic interest of enterprises in fulfilling this work.

A great many problems in the reforming defense complex have given rise to large structural changes in the course of conversion. Here the one main thing is to preserve and make effective use of freed production and scientific-technical and human potential in the defense complex for modernization and reconstruction of vitally important and socially significant sectors of the Russian economy. At the same time, along with the assimilation of new trends, those high technology and scientific industrial-technical directions, which are of strategic significance for the future, should be strengthened and developed on a program basis. These defense enterprises have had a strong (and in some cases exclusive) position among producers within the country and are able to carry out the task of import substitution, by producing competitive products and accelerated integration into the system of world economic ties.

In connection with the theme under discussion—the views of two countries on military-technical policy—it is worthwhile mentioning the specific provisions of the concept, developed by us, of state industrial policy in the defense sectors. This document is aimed at the realization, with minimal expense, of a restructuring of defense enterprises, as well as the necessary development of the defense-industrial base for maintaining national security and the near-term and long-term priorities of Russia. In its key provisions, it is directly connected or intersects with the path toward forming

military-technical policy, pointing at conditions for its realization and the existence of necessary prerequisites or limitations. I will briefly address our views of the more significant objectives in this regard, from the perspective of scientific-technical and foreign economic activities of the defense complex.

Scientific-Technical Policy

At this stage, the basic task of the scientific-technical aspect of industrial policy is defined as ensuring the maximal preservation and necessary development in the interests of the defense of the country of the accumulated scientific-technical potential. It also entails fuller utilization of this potential in the civilian sphere and its transformation with minimal losses adapted to the real demands and conditions of the market.

This task is being performed today in a situation of general deficit of means allocated by the state for the needs of scientific-technical development. In 1992–1993, in the scientific-technical sector of the defense complex, the reduction in defense orders is no less sharply felt than in the industrial sector. Allocations to RDT&E for civilian projects do not compensate for the decline which has occurred.

Under the existing conditions, a realistic scientific-technical policy should have a strictly elective character, but not waiver on the main points:

(1) In the first place, it is necessary to increase the share of allocations in the defense budget for military RDT&E, at least in accordance with the relative levels in the majority of countries with developed military potentials. Preference should be guaranteed in assigning funds to these functions in comparison with allocations for the purchase of armaments and military equipment. Attention should be given to the fact that this latter sector is oversized and subject to further reductions, since the Armed Forces of the Russian Federation have a limited demand for current deliveries of combat and auxiliary equipment. In the structure of the defense budget, sections on expenditure on military RDT&E should be considered as protected. It is thought that the resolution of these issues will be realized with the preparation of the law, "On Defense Budget."

(2) The task of program formation of optimal and future-oriented orders for state needs—both defense and civilian—is extremely important. On the same basis should be realized state support and budgeted financing of research and development of "dual-use" (multiple use). This is also true for existing "breakthroughs" against a background of world scientific-technical development or "critical" technologies from the point-of-view of maintaining defense capabilities and economic security of the country.

Let me note that the first large package of conversion programs at the federal level has already been prepared and recently approved by the Russian Federation Government. It calls for the creation by the defense complex of perfected technologies and equipment for fuel-energy, agro-technology and lumber industries; the renewal of the civilian aviation fleet and widening of exports of competitive aircraft and helicopters, the construction of modern ships, the creation of new types of medical technologies, means of communication and information and others (14 directions in all).

(3) A small, but more meaningful part of the scientific-research and experimental-design organizations, including large scientific centers, which remain under state control and included in the "core" of the future "consolidated" defense complex, will be

maintained directly from the budget. This measure may be necessary also if supplementary funding will be required also for research and experimental bases, laboratories, test sites, and unique installations.

(4) The scientific-research and experimental-design enterprises and organizations of the "core" of the defense complex (independent of the form of property) should be given: (a) priority in state orders both in defense and civilian RDT&E; (b) privileges in taxes, export-import duties and others; (c) credit guarantees for stimulating conversion and diversification and independent commercial activity; (d) priority in entry into the international and domestic Russian market; and also (e) investment incentives in the development of the scientific-technical potential and the creation of scientific products.

(5) Measures of multifaceted state support to the scientific sector are required also for another reason. This is to allow the participation of the scientific-research institutes and experimental design bureaus with corporations and holding companies in the creation of work on the final products of associations with reciprocal joint stock-holdings and financial-industrial groups. Through the assignment of government guarantees and tax incentives, we foresee resolving the issue of creating regional scientific-technical centers on the base of earlier "closed" installations. The introduction of customs and currency-financing privileges and the dismantling of unwarranted limitations are being contemplated to stimulate participation by scientific and experimental design enterprises and organizations in international business circles and scientific-technical cooperation, as well as entry into the world market in creating joint enterprises and projects and the attraction of foreign investors and partners.

(6) Securing the effectiveness of scientific-technical policy requires reform of the economic mechanism. It should be composed of its own basic elements—financial credit, prices, investment in the realization of an innovative process and shortening of the "science-technology-production" cycle. The attraction of all available sources of financing for scientific-technical and innovative programs must be ensured, including centralization of non-budgetary funds, special funds for assisting conversion, private means of enterprises, including those received from military exports, bank credits, etc.

With the transition to a contract system and new conditions of program planning, there should operate tax and price regulations for innovative activity, including the adoption of accounting of expenditures on RDT&E in general costs of the creation of products.

(7) The entire complex of state measures for forming and realizing a scientific-technical policy directly in industry requires coordination of activities of the ministries and departments, which ensures the financing of research and development and controlling the expediency of the direction and disbursement of allocated state means. A coordinating role is being carried out by the Federal Ministry of Science and Scientific-Technical Policy, where a corresponding Interdepartmental Coordination Commission is active. In August of this year, by presidential decree, the Interdepartmental Commission of the Security Council of the Russian Federation for Scientific-Technical Questions of Defense Industry was established with responsibility, in particular, for coordinating the development activities of scientific-technical projects of defense and conversion.

The Russian Federation Committee on Defense Industries has been called upon to lead a significant part of the basic and exploratory work, undertaken in the interests of the defense of the country. The committee deals with applied research and development of a

basic and anticipatory character (new technologies and materials, optical and electronic technologies, precision instrument making, etc.), large scientific-technical research programs (in the fields of aviation, communications, etc.) and the division of RDT&E into a series of special state conversion programs.

Military-Technical Cooperation

The active entry of the Russian economy into the system of world economic relations and its participation on fair conditions in the international division of labor find its own reflection in the foreign economic indicators of state industrial policy in the defense complex.

Leaving aside the most important purposes for increasing external business connections of the defense complex within the civilian sphere, I will only note the principal aspects of its cooperation with foreign countries in the military-technical sphere.

The activation of military-technical cooperation (both as part of creating, manufacturing and exporting armaments and military equipment and services for military purposes, as well in line with dual use technologies and "know-how") is determined by the requirements for maintaining the economic and defense security of Russia.

Military export and military-technical cooperation serve, above all, as a tangible source of those non-budgetary means which cover the most pressing needs for investment in conversion and diversification, and help resolve the basic task of restructuring defense enterprises. Besides this, defense production and defense science oriented to external consumers help alleviate negative consequences of partial or full losses of orders from the Ministry of Defense of the Russian Federation, and preserve technology not now in demand by both the defense and civilian sectors. In the future, military-technical cooperation may contribute to sharing technological achievements in development and manufacture of complex, science-intensive and expensive armaments, thereby reducing budget burdens, connected with unilateral development.

What are the main objectives of the policy of military-technical cooperation? The basic form of this activity will be export of armaments and military equipment and the fulfillment of appropriate work and services under international agreements. An economic interest of developers and producers should be created in accepting and fulfilling state orders for exported products (through credit and tax privileges, the right to independent price setting for products and services under state control, etc.).

Simultaneously, to raise the effectiveness and development of progressive forms of military-technical cooperation, a system of direct export of military products and services should be created. It should give enterprises, developers and manufacturers who have passed certification the right to seek customers independently in countries with which military-technical cooperation is not prohibited. They should also be permitted to carry out demonstrations of models and provide information about the characteristics of armaments and military equipment authorized for export, undertake advertising and marketing activities, negotiate contracts and directly export military products, and also services, produced over and above state orders.

In the near term, we intend to form, in accordance with world practices, the legal base for trade in weapons, military equipment, and for engaging in military-technical

cooperation with foreign countries. In this difficult and politicized area of foreign economic activity, the Russian Federation Committee on Defense Industries will not only represent and defend the business and natural "commercial" interests of national producers of military products, but will also undertake, as far as it is concerned, strict state control and competent regulation.

In this connection, attention will be given to the fact that foreign customers and partners, for example in the sphere of military-oriented research and development, can offer more than domestic consumers, who are restrained by the realities of budgetary limitations and the principles of our own military doctrine. In similar situations of resolving domestic contradictions and choosing preferable steps, it will be necessary to be guided by a long view and reasonable balance of economic and defense priorities for national security.

Conclusion

In the "Basic Provisions of the Concept of Foreign Policy of the Russian Federation" approved by President Yeltsin in April of this year, the basic principle was formulated that the defense potential of Russia should be maintained at a level commensurate with the threat, taking into account our real material capabilities and manpower resources. The importance of preventing external actions which undermine not only strategic stability and the defense potential of Russia, but also its position on the world arms market is noted.

In the section of the document devoted to Russian-American relations, it is stated that steps have been taken, in the mutual interest of Russia and the U.S., toward forming a stable and secure system of international relations, which is an objective basis for bilateral cooperation and the development of partnership relations. It is important that this development not infringe on the interests of Russia, since they do not always coincide with the interests of the United States. We expect that there will be changes also in Russian-American relations, where today discriminatory limitations still exist which hinder the development of trade, economic, and scientific-technical cooperation.

U.S. Military Technical Requirements— Views from U.S. Defense Industry

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I would like to share with you my thoughts on future military technical requirements and how U.S. industry might respond. In my case that will obviously be a perspective shaped by the U.S. defense electronics industry in which I work, the industry that supplies our military with many of the tools they require to do their job.

Just as in the commercial sector, the defense industry has to foresee what its customers will need in the future. Well before the need materializes, industry has to invest in research and technology to be ready to compete. Because that investment is expensive, and because the penalties for wrong decisions could leave us unprepared to win future major development programs, we look hard at what we believe the future has in store.

Examination of Future Trends

Our examination of future trends focus on three things. First, we try to examine political and policy factors that will shape how our government will approach future conflict. Second, we try to forecast what our troops are likely to need to succeed in the environment we have forecast and how technology can best serve that need. And third, we try to examine the acquisition environment in which we will be producing our products, which tells us what kind of industrial base we will be operating from and how to shape our approach to product definition. Let me describe an example or two relating to each one of these issues and try to give you my vision as to how emerging policy issues, military requirements and technology availability will impact the future battlefield.

All of this was a lot easier to do during the 40 years of the Cold War than it has been during the last couple of years. Whether rightly or wrongly, we in the U.S. were all focused on one potential adversary. We knew his capabilities and his tactics, we understood the notion of deterrence and how to make it work, we knew likely areas of conflict should deterrence fail, we understood our goals and objectives, and we knew, at least in a relative sense, how to achieve stability in that bi-polar world.

Today, forecasting the future is much more difficult. Stability is much more elusive. Our role in this new world has yet to be articulated clearly. Goals and objectives are extremely fuzzy. And yet with all of this, some trends seem to be relatively clear.

In any democracy, political factors play a significant role in shaping how a country responds to future military events. This is certainly true in the United States. One

significant factor is how the American public is likely to view conflict with less capable adversaries than we were used to with the former Soviet Union. The American public expects that the combination of American troops, training, and technology will allow us to go in, achieve our objective rapidly and decisively, and get out. They will have little patience for long drawn-out conflicts against an adversary with far less resources than the United States. Allied casualties of any significant magnitude will not be tolerated.

There is also an interesting aspect of the American sense of fairness. In general, the American public tends to view any conflict with another country as aimed at the leadership of that country, not at the civilian population. Moreover, Americans often view the civilian populace of those countries as victims of its own government rather than as targets of American enmity. With this general mind set, and with television bringing the events of the battlefield into every home in nearly real time, the image of widespread collateral civilian casualties will erode political support for continued military action. In Desert Storm, at the end, we saw this extend even to enemy military casualties, when it was clear that they no longer had any real will to fight.

All of these political factors are well recognized by our civilian and military leadership. Translated into policy, they will strongly shape the requirements for the battlefield of the future.

We can anticipate more and more reliance on conducting offensive actions from long standoff distances, that is, beyond "harm's way," using "invisible" delivery platforms and very precise weaponry.

We can expect to see extensive effort spent minimizing the enemy's ability to fight back prior to committing ground troops in close combat situations, through the application of electronic countermeasures, destruction of the enemy's command and control, negation of his intelligence-gathering capabilities and a weakening of his overall military infrastructure. We saw this in Desert Storm, where weeks were spent in this kind of preparation before the ground war started. The result, in the words of Deputy Secretary of Defense William Perry, was that the "casualties incurred [by Iraq vs. the coalition] were so lopsided—roughly a thousand to one—that there is virtually no historical precedent."

Those are some of the political factors and how they will shape the battlefield of the future. Let me now turn to the influence of military factors and the role of technology.

Obviously there is a broad range of significant technologies we could discuss today. I'd like to focus on what may be the most important and wide-ranging change in technology—electronics—and in particular, the revolution that has occurred in miniaturization of processing capability.

We see it every day. We can now carry the same processing power in a few square inches of a notebook computer that ten or fifteen years ago filled a room. The mainframe computers of the early 1980s provided a computer power of 10 thousand instructions per second in a cubic foot of computer volume. In contrast, today's desktop workstations are capable of 10 million instructions per second (MIPS) in the same cubic foot. At the same time, the cost of each unit of computer power has dropped by a factor of nearly 200. And the technological advances in this area are not slowing down, but are actually taking place at an increasing rate.

What this means to the military is that the gathering of information, the processing of information and the transmission of information will tend not to be limited by the size of a vehicle, a satellite, a weapon or what a person can carry.

Let us examine a few examples of how military need and technology availability have come together to impact military mission areas.

Precision Strike

Consider the issue of precision strike. For the policy reasons mentioned above, its use will become more and more of a requirement. But just pause a moment to look at what is required to do it. Imagery of potential targets has to be gathered, presumably from satellites (which incidentally now have the resolution to literally "photograph" target details from space).

The enormous amount of raw data that such a capability generates has to be processed, transmitted to the ground, sorted for individual users, put into the hands of those users, processed again to aid the user in the very difficult job of target recognition and delineation, and put into the specific weapon that will be used against that target. In flight, the weapon has to gather and process its own imagery of ground features and, by comparing its own images with those stored inside it from the satellite, guide itself into the particular object that it is trying to hit. And all of this is happening while flying at speeds in excess of the speed of sound. The task of processing all of this data, as it is being gathered, in small fractions of a second is immense, but this is exactly where the greatest technology advances have been.

High-speed, highly integrated semiconductor chips, which just five years ago contained hundreds of transistors, today contain hundreds of thousands. This growth has enabled weapons to carry on-board computers capable of billions of operations per second to process images of the target area each containing 15 to 20 million bits of information. This provides the strike weapon with a target-hunting capability equivalent to finding a random pattern of ten letters in a 350-page novel once every second.

Similar advancements have taken place in the "eyes and ears" of strike weapons through such high-frequency sensor technologies as monolithic microwave integrated circuits, which can fabricate an entire microwave receiver on a single chip.

What we see in the newly emerging precision strike capabilities is two sides of an equation being brought into balance. On one side is the military need, driven by policies which in turn reflect the political factors of the times. On the other side of the equation is technological feasibility, in this case the ability to gather and process the required target information. And when need and technological feasibility happen to come together, new capabilities are born.

Command, Control, Communications and Intelligence (C3I)

In order for such capabilities to work operationally, intelligence information has to be instantly available worldwide. Since we will not be able to predict well in advance where future conflicts are likely to occur, forward deployed intelligence centers will be less

useful than they have been in the past. Over the next ten years or so, we will have to shift the center of our regional intelligence efforts from forward deployed joint headquarters, like U.S. European Command, to the United States, where much of the processing, analysis, and distribution will occur. To accommodate this global distribution, national intelligence nodes will have to be linked to a global grid which can provide tailored regional information to supported joint forces. They will literally "plug-in" to these "virtual" networks.

In a contingency, rapidly deploying forces will be equipped with robust electronic data bases applicable to their intended theater of operations. Upon arrival in an area of operations, these data bases will be complemented by intelligence collected by in-country systems to provide an up-to-date situational assessment and accurate targeting intelligence. To accommodate these needs, commanders operating in remote theaters will have to be equipped with the necessary processing equipment to rapidly fuse intelligence developed in the U.S. with that acquired in the area of operations.

Rapidly configurable task forces, able to deploy to any region of the world, will be under Joint Commands—joint in the sense of multi-service and joint in the sense of multi-national. Joint commanders will be required to control ships, aircraft, and artillery systems with a wide range of intelligent weapons systems capable of long-range attack against high value targets. These systems will receive targeting data directly from ground or air controllers and proceed to target areas or launch points where on-board sensors will guide the brilliant weapons to the target. It will be our job in industry to provide the means of doing this in small packages, with very few operational and support people, and at low unit cost.

Theater Missile Defense

Another area that will undergo significant change is Theater Missile Defense. There is a current tendency to focus almost entirely on countering the tactical ballistic missile threat and that is certainly important. TBMs have proliferated widely throughout the world and many adversaries or unstable governments possess them. We saw in Desert Storm the potential strategic and political significance of these weapons, even when inaccurate and armed only with high explosive warheads. Through Patriot's success, we also saw the strategic, political and humanitarian value of countering TBM.

But our resources in dealing with that threat were severely limited. The only system we had was not fully designed to handle the threat. We had no high altitude wide area defense capability. We had no boost-phase intercept capability. Our success in destroying TBM launchers on the ground was at best spotty. These limited resources will not be adequate in the future when theater conflicts are likely to involve the enemy's use of chemical, biological or even nuclear warheads.

In the future we must have the ability to counter TBMs with a variety of resources, including active defense in all phases of TBM flight trajectory, passive defenses, counterforce and improved C3I. Through improved C3I, automatic area delineation, better target recognition and better long-range strike capabilities, our ability to hit launchers either before or after they fire, will be vastly improved. In the future, we must be able to network satellite, aircraft and ground assets in order to reduce total time-lines

from hours to minutes. This technology will permit very rapid re-tasking of strike aircraft in flight to engage time critical targets such as mobile launchers.

Active defense against TBMs in flight must remain a high priority. Certainly efforts at achieving wider arms control to slow down the proliferation of TBMs must continue, and to the extent that active defense contributes to deterrence and takes away some of the incentive to possess TBMs, active defense will support new arms control initiatives. But we also have to re-examine our classical notions of deterrence. Saddam Hussein conducted TBM attacks on Israel purely in the hope that he could push Israel into retaliating. A conception of deterrence based largely upon retaliation would appear to be totally inconsistent with this mentality. Rather, we must turn to a multi-faceted approach, one component of which is active defense. It can contribute to deterrence by lowering the probability of achieving any meaningful gain from carrying out an attack.

With new upper-tier anti-missile capabilities already underway to provide greater areas of protection at higher altitudes, improved lethality against a broad spectrum of warheads, the ability to conduct higher numbers of simultaneous engagements, and the ability to discriminate warhead sections from other ballistic objects, created either purposely or inadvertently. Similar capabilities are also being initiated by the Navy for sea-based defenses.

I also believe, however, that attention will shift to other types of theater missiles, such as cruise missiles. The success that the U.S. experienced in Desert Storm with Tomahawks, against an enemy that had no ability to counter them, will not go unnoticed by the rest of the world. In an age when nearly every country has anti-ship cruise missiles and when anybody can buy a Global Positioning System (GPS) receiver at their nearest Radio Shack, and with it guide any weapon to an area smaller than a football field, the use of cruise missiles to attack large fixed objects such as cities is obvious. Coupled with its potentially low cost, its inherently stealthy shape, and its ability to fly at low altitude masked by terrain and ground clutter, the cruise missile is likely to become the weapon of choice for many countries in the future. Countering it must become a high priority.

Rapid Response to the Unexpected

Another experience during the Gulf War provides some insights for the battlefield of the future. People sometimes asks what were the "lessons learned" from Desert Storm. I think one of the most important lessons was "expect the unexpected." Military people tend to know this instinctively. We in industry have to be reminded from time to time. In the future, against potential adversaries about whom we know less than in the past, we will more than ever have to deal with the unexpected and be able to respond in rapid fashion. Software will be one of the keys.

In Desert Storm when it was discovered that the Iraqi-modified Scuds were behaving differently from what had been anticipated, software modifications were implemented in the fielded Patriot units to accommodate the unexpected TBM characteristics. Two aspects of this are significant. First, modern-day systems are largely software driven, and fundamental changes in system operation can be made by changing software rather than hardware. Certainly this trend will increase even more in the future.

Second, because these changes could be made without developing, producing and installing new hardware, the time between identifying an issue and fielding a solution was a matter of weeks rather than months or years.

In the near term we must drive to shrinking the weeks to days. We must have the ability to network field units, via satellite, to engineering facilities in the United States. This will allow engineers in their laboratories instant access to all relevant weapon system data recorded in the field. Once the modifications are developed and tested they can be transmitted back to the field almost instantaneously.

In the future, when enemy threat characteristics are likely to be even more uncertain than they are today, and with increased pressure to resolve conflicts rapidly with minimal casualties, the ability to quickly adapt to the unknown will be at a premium. Some in industry believe that in the far term we will go far beyond this. They argue that software technology is increasing almost as rapidly as electronics hardware technology. They envision systems in which the operator on the battlefield can actually make system software changes, based upon what he or she observes in the field, without necessarily understanding the details of the system or possessing a degree in computer science. They argue that the translation from field observations to actual software code can be performed automatically with expert systems, and that all that is needed is to provide the operator with a usable high level interface. I can certainly see this as a possibility, but I remain a bit skeptical.

Training

Let me comment on one other fundamental change that must take place in the battlefield environment. We have already described the growing uncertainties as to who our opponents will be, who our allies will be from one situation to another, where in the world we will be required to fight and what composition of allied forces will be required. And we also described what technology must be able to do for us on the battlefield of the future. But all the technologies in the world won't help if we don't have capable well-trained troops.

I believe that our troops are the best in the world—bright, motivated and well trained. But with our own forces becoming smaller and lighter, conducting integrated campaigns with joint forces in multi-national coalitions, the role of planning and training will take on even greater significance. In the past we often trained utilizing large field exercises, in the relevant geographic areas, with the allies that we knew would be fighting at our side.

But how, in this new world, do you plan and train for the one scenario that might develop out of a myriad of very diverse possibilities? And even if there were sufficient advanced warning, coalition training and mission rehearsal by means of field exercises are becoming increasingly impractical due to cost and environmental considerations.

The emerging solution to this problem is to utilize an advanced form of distributed interactive simulation in virtual battlefield environments. The basic concept, enabled once again by the incredible growth in electronics processing capability, is to provide training at manned simulators which are connected in large-scale networks using high bandwidth communications links. Each simulator incorporates appropriate operator interfaces and

generates one or more simulated entities (tanks, planes, and so forth). The simulators' databases all represent the same land, sea and air environment and simulation messages describing every detail of a battle are broadcast over the network reporting simulated events. This allows the simulated entities to interact even though they may be spread throughout the country and even from country to country.

Current implementations involve networks of relatively low-cost, selective fidelity simulators. In the future, advanced distributed simulation capabilities must be added to the training systems embedded in fielded weapon systems, so that they too may participate in simulation exercises on virtual battlefields. With that capability standardized and implemented in field units, the military will be ready to conduct ad hoc coalition forces training and mission rehearsals anywhere, on short notice, and against any foe. In effect we will have the ability to dial an enemy, a scenario, an allied force and a mission and then practice, train and rehearse the roles of each participant integrated into a whole.

The Acquisition Environment and the Industrial Base

Let me conclude with some thoughts on one final subject. I believe that all of the technologies and potential capabilities that I have described are achievable within the next decade or so. That they are necessary if we are to succeed on tomorrow's battlefield with fewer people; lighter, smaller and reduced numbers of weapon systems; and against potential adversaries about whom we know very little. But all of this technology will mean very little if we don't have an industry geared to produce what we need in a time of crisis—on demand, at high rate and affordably. Our ability to do this will depend upon the acquisition environment that we in industry must work within in the future.

The numerical size of our forces is shrinking, partially because of the dramatic changes that have occurred in the international environment and partially due to budgetary pressures created by the deficit, the economy and social issues which demand attention. But to the extent that the reductions in overall military expenditures are driven by budgetary issues, weapons procurement will take a double hit—first, because fewer forces need fewer weapons and second, because there will always be a tendency to cut things before service people.

Two questions must be addressed. First, what must industry and the Defense Department do to adapt to a world in which technology can be used to offset reduced fighting strength, but where the opportunity to exploit that technology in large production runs of new systems will be vastly curtailed? And second, how will we maintain a warm industrial base that can surge production when it is needed to meet a crisis?

We in industry must learn how to produce things in smaller numbers, at lower cost and faster—without sacrificing quality. We must learn how to establish production facilities that are more flexible in terms of what they produce. We can no longer afford to dedicate production lines to a single product, predicated upon producing that product in large numbers over a span of many years. This will require a lot of creativity and new thinking in terms of how we automate our processes, train our workers, establish and select our vendor bases, perform inspection, maintain quality control, perform our testing, lay out our floors, and the like.

I am not describing production lines that produce VCRs one day and Patriots the next, because I don't really believe that this is feasible. But I do believe that we can achieve better flexibility in how we produce military products, do things quicker and still maintain the ability to surge production and maintain quality. We will certainly try, but the government must also do its part.

With technology moving as rapidly as it is, and budget pressures limiting opportunities to field new advances of the state of the art, the only way to prove out new technologies before they become obsolete will be to incorporate them in very limited buys of new systems or upgrades to existing systems. In either case, we cannot afford to apply the same cumbersome acquisition procedures, geared to very large production quantities, that we have used in the past. They take too long, they are too expensive, and they are too inefficient when applied to buys of hundreds rather than thousands or tens of thousands. They must change to meet the needs of today's environment.

Lastly, the government has to play a more active role in helping American industry to compete in foreign markets. Production of American products for foreign markets can play a major role in deeming American production facilities ready and able to surge production for U.S. military use should the need arise during a crisis.

One of the ways the American government can help U.S. industry compete with the industries of other countries is in the area of financing. Today, many of our foreign government customers want to spread their payments for military products over a number of years by financing their purchases. Most of the European industries with whom we compete offer their prospective customers in other governments financing packages at very attractive rates. They can do this because their own governments either provide the financing or guarantee it. Our government has only recently shown interest in providing finance guarantees for U.S. industry military sales to foreign customers.

Without U.S. government guarantees we end up offering less attractive financing packages than our competition and often find ourselves in a non-competitive position. We and the U.S. government lose in a number of ways. We don't make the sale, our government loses the potential tax revenue, the U.S. is not able to recoup prior investments it has made in military research and development, and in some cases production terminates. If in time of crisis these products are needed again, the delay will be long and the start-up costs will be very large. This is but one area in which the Government can help while we in the defense industry do our best to adapt to the new world in which we operate.

In summary, I believe that the technological revolution that is going on at this very moment can adequately supply the needs of the battlefield of the future. This future battlefield will in many ways be a battlefield for information. Whoever can gather it better, disseminate it better, and get it rapidly into the hands and weapons of the shooters will have an enormous advantage. It can be used to provide the kind of leverage we will need to end conflict swiftly, train our troops, understand our adversary's tactics, sort out and adapt to unexpected threat characteristics, minimize casualties on both sides, and do with less on tomorrow's battlefield. But aside from the technology we need, and I believe is available, we also need to maintain a strong industrial base to supply the tools our troops will need on tomorrow's battlefield. Here we need to adapt to the new acquisition environment, and the required adaptation must be a joint responsibility between U.S. government and industry.

Conversion in Russia: The Most Urgent Tasks

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The military industry of Russia, inherited from the former USSR, was adapted essentially to an absolutely different era in international relations; an era of confrontation, where monstrous military-industrial complexes had been created at both poles of the world. This defines the role of conversion in overcoming the political and economic legacy of this era. In Russia, conversion has become the most important element, not only of economic, but also of post-Communist, reform.

The most important feature of conversion in Russia is the fact that it is occurring under conditions of the country's transition to market economics and its national industries' entry into the world market. In the final analysis, this creates basic complications in implementing conversion.

It is obvious that an important precondition for the success of conversion in Russia is the integration of the national military-industrial complex (VPK) into the world economy. On the other hand, it is clear that the most important condition for integration of the defense industries of Russia into the world economy is successful conversion of defense production. This, in essence, is the Russian concept for conversion.

As soon as our industries entered the world market, they required protection by the state. In other words, as in other industrially developed countries of the world, in Russia, there arose a need to pursue a protectionist state policy. For this, in particular, a special unit was created within the Ministry of Foreign Affairs (MFA)—the Administration for Export Control and Conversion, whose basic tasks consist of helping national enterprises find foreign partners and integrate into the system of world economic ties.

At the same time, the potential and capabilities of the MFA in these questions are underutilized; for their maximum realization, coordinated actions with the defense complex are required. The MFA, having a broad network of foreign offices, knowing the demands of the market and our international commitments, can and should play a significant role in implementing state policy in securing more favorable conditions for Russian conversion. The MFA is ready to prove in practice that its experience, authority and influence will help Russian industries appropriately and can conduct dialogues with our foreign partners in conversion on an equal footing.

In spite of the resemblance between the processes of conversion in Russia and the industrialized countries of the West, there is one fundamental asymmetry. In contrast to Western countries, the military-industrial complex in Russia is the property of the State, and the role of the State in this process is defined by its position as the owner. For this reason, the role of the Government in implementing conversion in Russia is much greater in comparison, for example, than that in the U.S. Therefore, it is fully natural that specific

enterprises undergoing conversion are turning to the State ministries and departments—including the MFA of the Russian Federation (RF) for help.

This is precisely why, in the first place, we place such great significance on the activities of interstate, bilateral commissions and committees on questions of conversion, created and established between Russia and other countries.

On the other hand, it becomes obvious that no matter what efforts are made at the government level in the direction of conversion of military-industrial enterprises, they will be insufficient. A primary role should be played, first of all, by non-governmental organizations. In a sense, we share the well-known concept of the U.S. administration in placing priority in private business for cooperative conversion with Russia. Indeed, it is entirely clear that neither the MFA, nor other departments are in a position to oversee and coordinate all conversion projects. For this, the Government should rely on the powerful network of non-governmental organizations.

Therefore, we see the basic role of governments in implementing conversion as giving broad support to non-governmental organizations. Namely, the latter should, in the final analysis, create their own "infrastructure" for conversion. In other words, a network of consulting firms should be created, as well as an information agency where a data bank would be maintained for Russian and Western enterprises. In addition, such organizations should have a sort of government "certification" so that they can operate in essence as quasi-governmental organizations. This is necessary to differentiate them from other private organizations which don't receive corresponding government support and thus have no authority to act in its name.

In this context, therefore, the activity of recently established associations of large-scale defense industries with the support of the appropriate department of the RF international non-governmental fund, "Integration," should be noted. Although it is a non-governmental, independent organization, the fund enjoys powerful government support. Its tasks include wide-ranging facilitation of integration of Russian defense industry into the world economy. The fund can become an effective instrument for establishing now, a bilateral intergovernmental commission for problems of conversion. With regard to the MFA, it intends to help the establishment of the fund through its foreign connections and to use for this purpose its facilities abroad.

Attention should be given to the fact that the word "conversion" is used often as a fashionable political term. By this, we often mean something entirely different. In essence, up to the present time, we have not had a universally recognized definition of this term. But it is possible that we ought not to try to define it. In the final analysis, we are talking primarily about integration of Russian industry and in this given case, of the defense industry, into the world economy. Such a concept, it seems, has an internal political dimension: namely the integration of the Russian defense industry into the world economy should, in the final analysis, create effective guarantees of the irreversibility of democracy reforms in our country.

From the discussion, it appears to me, clear functions emerge for bilateral intergovernmental commissions on conversion. First of all, these commissions should identify and subsequently remove obstacles that stand in the way of cooperation between Russia and other countries in the sphere of conversion; and in the future, also in military-technical cooperation. Therefore, the work of such commissions can only be effective if these intergovernmental organs include the participation of business representatives in the West and directors of defense industrial enterprises in Russia. Specifically, they must

help the governments formulate recommendations concerning how to eliminate such obstacles.

In connection with this, a concept for conducting meetings of these organizations has emerged. It seems to me that they should be based on a regular review of the existing situation and then on formulating recommendations for both governments concerning the elimination of existing obstacles to cooperation between Russia and other countries. For this, it will be necessary to hear the opinions of business representatives. But removing the obstacles is the job of the governments.

It goes without saying that as far as the situation will be constantly changing, recommendations at each stage will be different. However, in light of the goal, which should be pursued by such organs, they would be "self-abolishing" once all the obstacles are significantly removed.

In addition, we frequently hear apologies from Western countries because they are unable now, in light of the domestic political situation, to provide extensive financial support to Russian conversion. The Russian Government, however, is not counting on such support. According to our economists, only the first stage in implementing Russian conversion will require 150 billion dollars (in the course of 7-8 years). It is obvious that no Freedom Support Act can, it stands to reason, resolve this problem. The primary goal of the Russian Government consists not of asking the U.S. and other Western countries to finance Russian conversion programs, but to create in Russia, the appropriate legal, economic and political climate which is favorable for private Western investors.

The recently held international conferences and seminars with the participation of Russia and the industrially developed countries of the West permit summarizing the measures which must be taken in order to achieve these tasks.

It is recommended that Russia, in particular, undertake the following measures:

- (1) Enunciate, as quickly as possible, a policy of national security and a military doctrine; the levels and composition of Armed Forces and requirements for weapons and military equipment; reductions of production in defense sectors and priority spheres for conversion.
- (2) Make a presidential announcement to Western businessmen welcoming their energetic involvement in the conversion of Russian defense industries and citing concrete provisions for indemnifying their private investments in this sphere.
- (3) Clearly indicate that many industrial enterprises may be closed, others radically preserved or reorganized on the basis of market principles through a program of retraining personnel, giving up old technologies and pursuing new ones with the help of foreign partners.
- (4) Begin implementing projects, using and retaining more cost-effective design and administrative cadres, on the conditions that these projects will be undertaken by new joint stock companies and not on the basis of current organizational structures. Encourage the formation of companies with organizational responsibility, holding companies and also small enterprises that employ capable engineers and designers and privatize these new structures.
- (5) Ensure operational implementation of projects which facilitate modernization and development of the infrastructure— transportation and communication systems, the system of production and distribution of energy and processing

- (6) Encourage the formation of joint enterprises with Western companies capable of providing necessary assistance in the projection, marketing and financing to ensure the success of commercial projects that are undertaken.
- (7) Accelerate the privatization of industries undergoing conversion through the transfer of state property, which is necessary for conversion projects, to newly formed joint stock enterprises.
- (8) Accelerate the creation of the legal and financial infrastructure necessary for companies, operating in a market economy, and creating business partnerships with Western companies.
- (9) Facilitate the visa regime for business people, interested in conversion projects.
- (10) Ensure that conversion projects are separate from existing defense enterprises and governmental bureaucratic structures. This separation should be accompanied by the creation of new joint stock enterprises or other business organizations with the goals of research, production and sale of new commercial products.
- (11) Introduce tax breaks for conversion projects and other long-term projects and other advantages and privileges for Western companies interested in such projects.
- (12) Develop a national program of gradual access to the potential of defense industries (personnel, materiel, and scientific).
- (13) Create a financial climate that is favorable to normal banking operations.
- (14) Adopt international standards in the sphere of implementing joint technology projects.
- (15) Continue work directed at advertising national high technology abroad through exhibitions, seminars, etc. Create joint cooperative production, joint enterprises for research and production of competitive goods, sale of high technology goods, and licensing "know-how" as a way for Russia to receive hard currency and assisting its integration into the world economy.

The Western governments, in turn, as has been recommended by experts, can take the following actions:

- (1) Declare unequivocally, at the highest level, that the irreversible conversion of the Russian defense industry is in accordance with their national security interests.
- (2) Remove the COCOM restrictions which are obstacles to concrete defense conversion programs.
- (3) Provide technical assistance in the creation, in Russia, of the legal and financial infrastructure necessary for business activity in the West.
- (4) Provide technical assistance to companies trying to create joint enterprises in Russia.
- (5) Extend activities of corporations that insure investments (like the Overseas Private Investment Corporation in the U.S.) to Western companies operating in Russia.
- (6) Expand existing programs of exchanges of people between universities, social, military, juridical and academic organizations.
- (7) Immediately examine and lift existing legal restrictions imposed during the Cold War in connection with aid to Russia and other countries of the CIS [1].

- (8) Stimulate private investors through simplification of the export licensing procedures, revision of the list of prohibited technologies, making the visa regime easier for business travel from Russia and other countries of the CIS, etc.
- (9) Resolve the issues of macroeconomic assistance tied to the stabilization fund or debt servicing through existing international organizations. In connection with this, the Western countries should allocate a fair share of supplementary "Special Drawing Rights" of the International Monetary Fund (IMF) and encourage energetic participation of the IMF and International Bank for Reconstruction and Development (IBRD) in the economic development of Russia and other countries of the CIS, including both commercial and investment credit.
- (10) Take diverse actions in facilitating the access of Western companies to the technology base in Russia. Such actions could include: financing technology fairs which would be demonstrations by technology companies and scientific institutes of the Russian defense sectors in the interests of Western civilian companies and technology agencies; and establishing exchange programs between institutes and centers of defense production in Russia for conducting work on technologies where the Western side can work as a close team with the civilian private sector.
- (11) Continue providing humanitarian assistance, especially food stuffs and clothing, on a soft credit basis until economic reform yields results.

The accumulated experience in conversion, and, most of all, the first steps in readjusting direct contacts with Western partners show that in this sphere we are not sufficiently organized, coordinated in our actions, and often are not sufficiently professional. Newly created organizations, associations and foundations often duplicate each other, entering into unhealthy competition. All of this disorients Western firms and creates a feeling of uncertainty in the reliability and competence of their Russian partners.

Currently, with the active participation of experts of the MFA, there is functioning a series of bilateral commissions with Western countries on the issue of conversion. However, the time has come when efforts in the sphere of conversion might be combined and placed on a solid state basis. Considering its national significance, it is necessary to coordinate such work into a single government organ, for example in a *Council for Conversion*, uniting all interested ministries and departments. The Council could be charged with developing the strategic goals, principles and directions of conversion and also recommendations for the legal protection of conversion (guarantees for investments and tax advantages). Within the framework of the Council, the MFA could take upon itself the function of developing the Russian position on questions of international cooperation, of forming a sort of connecting link between the defense complexes of Russia and the Western countries. The Ministry could provide assistance in studying specific conversion programs, in their coordination at the international level with the aim of rapid integration of the defense sector of Russia into the world economy.

In our view, this need to study the question of creating a special international investment fund to support and implement conversion projects and programs has matured. Such a fund would undertake an independent examination, by experts, of projects and based upon its findings, would subsidize appropriate means for their realization. Founders of the fund, together with Russian enterprises, could include foreign

private companies and banks, foreign states, and international organizations, for example, the European Bank for Reconstruction and Development (EBRD).

Russia realizes the scale of the tasks before it, of the large financial investments required for conversion programs, of the fact that the real fruits of conversion will appear only in the mid- to long-term. Therefore, it is so important now to overcome the initial, more painful—from the point of view of social-economic consequences—period of conversion of the defense industry. Russia depends, in connection with this, on the economic and financial support of the West—not on a charity basis, but on a pragmatic, mutually-beneficial basis.

In my view, it would be highly valuable to attract, in the immediate term, Western private capital to realize several specific conversion projects in Russia with appropriate guarantees by both the Russian and American governments. The success of these projects would not only have economic but political significance for the long-term development of cooperation.

Notes

1. For example, the Jackson-Vanik Amendment and the Stevenson and Beard Amendments concerning bank credits; the Johnson Amendment on the issue of the market in official papers; the Church Amendment restricting the financing of oil and gas enterprises; as well as, the current restrictions on insurance in Russia for the Overseas Private Investment Corporation.

The Prospects for U.S.-Russian Cooperation

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It seems to me that we should approach our topic in its context as a vital element of our foreign policy. In any event, I have no other way of examining the subject, since I have never had any hands-on or hands-off experience with high technology defense implements. I want to start therefore, as Ambassador McNamara did, by recalling some points about the history of Russian-American diplomatic relations and their prospects for the future.

It is perfectly correct to remind ourselves that the diplomatic relations between the United States and Russia were good throughout the late 18th and 19th centuries. Indeed, they were excellent, because we both recognized that we had common interests. Those common interests were the fact that for us in our early years the great dangers came from Great Britain and Spain and to a certain extent from France as well. Russia, too, outside the central area of European diplomacy, found Britain, the leading power of the day in world politics, a thorn in her side and a threat, so that we made common cause against the British with considerable comfort to both countries throughout the 19th century. Indeed, on many occasions, we lent each other a helping hand. For example, it was a Russian offer to mediate which got us and the British to begin negotiations to settle the war of 1812. In that war, the United States and Russia suddenly found themselves on opposite sides. Neither the United States nor Russia wanted that situation to continue. Russia gave up her ambition to move south from Alaska to San Francisco at our request. And so, for example, the United States was the only power that publicly supported the Russian side in the Crimean War. And in the Civil War the Russians sent naval squadrons both to New York and to San Francisco to make a demonstration in favor of the United States.

Then, of course, the world changed, because Germany came to the fore after 1871. As the structure and dynamics of the balance of power changed, we both responded to the emergence of Germany and its implications for the distribution of power in world politics, and we fought together in both German wars.

I disagree with Ambassador McNamara on one feature of this experience. He said that the bad relationship between Russia and the United States during the Bolshevik period was caused by differences in ideology and not differences of interest. I quite agree with him that our true interests have been congruent throughout the history of the United States since 1776. Our interests in fact were never incompatible. But the differences we had with the Soviet Union were not differences of ideology; they were differences about power and the Soviet expansionist policy. The Soviets suffered from the same disease that made Napoleon such a monster, and ultimately had to be dealt with in the same way. We should not dismiss the Bolshevik period simply as an aberration of ideology and look forward to a rosy future without any blemishes or troubles. There are troubles, and there is no use making believe that good will can overcome them unaided.

I saw American policy at the end of World War II at first hand in certain areas, and particularly in the area of our relations with Russia. At that time, I was working for Dean Acheson, who was then an Assistant Secretary of State, and I was much involved with the Lend-lease program. Since there is still some controversy about the onset of the Cold War, and since it has important implication for the present time, I'll take a few moments to recall that period.

It is often said that, in our policy at the end of the war, the United States was preparing for the Cold War. This charge is not correct. The fact is that at the time we were desperately trying to head off the Cold War, and made extremely active efforts to establish a relationship with the Soviet Union which would continue our wartime alliance into peacetime. Through every possible avenue, we tried to reach an understanding with the Soviet Union to work together in enforcing the rules of the United Nations organization which we had just cooperated in creating.

I myself worked on the first project for a postwar reconstruction loan to the Soviet Union. In 1944, Mikoyan, for Stalin, had asked whether we could make a postwar reconstruction loan. I happened to be the junior fellow working on that enterprise. The whole government was pushing very hard to have the war end with the announcement of postwar reconstruction loans to the Soviet Union, to Great Britain, and to France. I worked out the legal theory on which to base the program. In that period, Stalin made his essential decision whether to cooperate with the West or to oppose it. Indeed, he once said to Ambassador Harriman, "We appreciate what you and the government in Washington have been trying to do, but we have decided to go our own way." It was a grim moment, but the United States persisted in its efforts to reach a peaceful understanding with Stalin and all his successors. We repeated that effort over and over again in struggling to find a way to get along with the Soviet Union in peace and to avert the Cold War which we had seen developing in most ominous ways toward the end of the war. There wasn't any ambiguity about Stalin's policies during the final days of the European phase of the war. The negotiations over the future of Poland were bitter. As the Soviet troops moved West, they set up puppet governments as they advanced.

As we approach the problem of our relations with Russia following the collapse of the Soviet Union, it is important to recall those days, and to realize that our policy goal in relation to Russia is and has always been the same: namely, the goal of deep and many sided peace.

We should approach that goal with great care. I am not as optimistic as Ambassador McNamara. It may not be easy to achieve that goal, but I hope that our government will continue its strenuous efforts in the field of defense, as in others, to achieve and maintain a steady relationship with Russia. We want exactly the same kind of relationship with Russia that we have with the countries of Western Europe, with Japan, and with China, the other great powers of the moment in world politics. All the major powers face the same responsibilities for the maintenance of peace and prosperity. They all have the same obligation to cooperate together in order to achieve those common goals. It is our highest national interest to help organize that cooperation and to sustain it.

We must continue to work to that end, but we must not deceive ourselves into thinking that goals will be achieved automatically and without friction. The possibility of success depends on two processes, the outcome of which cannot now be predicted with any confidence. One is that the Russian Republic survives the present period of

turbulence and transition and secondly, that its foreign policy evolves as a policy of scrupulous compliance with international law.

I agree with Ambassador McNamara's emphasis in his presentation on trying to isolate topics for developing deeper and more sustained cooperation with Russia in areas where our interests are visibly the same. Negotiating with the Russians about the problem of nonproliferation has never been a difficult task for us diplomatically, because the Russians have always recognized that we both have the same interest in keeping the nuclear club small. The problem of nuclear proliferation and the proliferation of other weapons of mass destruction is the most urgent single program on the agenda of world politics today. It should be addressed by our government and the other governments as something that has to be dealt with decisively and soon. I'm afraid I don't agree with the implication of what Ambassador McNamara said on this subject. He remarked, you will recall, that by tightening and perpetuating the present IAEA regime at the conference in 1995 on the future of the NPT treaty, we will all live together happily forever after.

The problem of proliferation has changed in character in recent years with the proliferation efforts made by governments like those of Iraq, Iran, North Korea, and so on. I suspect that Libya also belongs in that package.

The history of the proliferation problem goes back to the Cuban Missile Crisis of 1962, when the United States used force and threatened to use more force in order to get Soviet missiles and nuclear warheads out of Cuba. All Americans and most Europeans and most people elsewhere in the world thoroughly understood and agreed with what President Kennedy did on that occasion. The world simply would not tolerate having nuclear missiles under the control or potential control of Castro.

From the point of view of international law and international politics, the American decision is not easy to reconcile with the principle of the equal sovereignty of all states under the United Nations Charter. Yet the world accepted Kennedy's decision as wise and legal. The Soviet missiles could not have been fired because our nuclear superiority over the Soviet Union in 1962 was very great—5 to 1, 7 to 1, the figures vary with the times and the degree of expertise of the estimators, but it was an overwhelming superiority. President Kennedy proposed to send 250,000 troops into Cuba. The Soviet Union could not have used nuclear weapons in response because our nuclear superiority was so great that it would have been suicidal even to think about doing so. So President Kennedy faced down the Soviet maneuver and the missiles and warheads were withdrawn. The same kind of action was taken on the same grounds by the Israelis in 1981, when they bombed the Osirak reactor in Iraq.

A right to use force against the deployment of nuclear weapons in certain pariah states was formally confirmed by the cease fire agreement in the Gulf War. That agreement was ratified by the Security Council. It therefore had the unanimous support of all the great powers and some of the other powers sitting on the Security Council. They decreed that Iraq could not possess nuclear weapons or other weapons of mass destruction. We have been sparring with Saddam Hussein ever since because he doesn't want to comply with that decision. He has been playing hide and seek with the IAEA inspectors, waiting for us to get tired of the exercise. The nuclear question in Iraq remains unfinished business. Exactly the same sort of thing is going on now in North Korea, in Iran, and perhaps other states as well.

The problem of keeping the nuclear club small is much more serious than was indicated by Ambassador McNamara when he talked about the NPT Conference in 1995 and mentioned sanctions and other ways of dealing with outlaw states. The problem of nuclear proliferation has gone beyond the reach of normal diplomatic practice. We should long since have noticed that economic sanctions have never accomplished the miracles their advocates promise. And the IAEA's inspection methods are by no means infallible. South Africa spent sixteen years building nuclear weapons in secret, after all. And during the Gulf War we discovered that our intelligence about Iraq's nuclear program was totally inadequate. We should now be exploring with the other nuclear powers the possibility of adopting rules which qualify the sovereignty of certain states, with regard to nuclear weapons. If this particular genie gets out of the bottle, we're going to be facing a situation in which international politics becomes almost unmanageable.

I think a second area which Ambassador McNamara did not mention where I think we should urgently engage the Russians with proposals for close cooperation is the question of accepting the normal rules of international life with regard to civil war in many of the new states carved out of the Soviet Union. We face comparable problems in the former state of Yugoslavia.

The Soviet Union did cooperate with us in the political-military sphere with regard to the Gulf War, more or less, without much enthusiasm, and Gorbachev, at the end, tried his best to derail our proposals in the Security Council but didn't carry his opposition to the limit. The Russians have not cooperated with us at all in Yugoslavia, however. Our own proposals were not adequate, but the Russians didn't behave any better. We have both allowed a terrible mess, and a very dangerous one, to develop in the territories of the former Republic of Yugoslavia. Comparable conflicts are occurring in ex-territories of the former Soviet Union in a number of places, in Georgia and Armenia, for example.

These dramas may become politically more dangerous even than the tragedy in the former Yugoslav territories. I say "more dangerous," because there are increasingly serious reports of Russian participation in those civil wars, and even of Russian incitement. Some advance the view that the Russians are trying to exploit situations of tension among the populations in the new countries in order to justify undoing the collapse of the Soviet Union, and beginning to restore the Russian Empire. There is even talk of threats toward Ukraine, toward the Baltic states, as well as the situations in Georgia, Armenia, Azerbaijan and elsewhere in that vast territory.

I don't mean to sound alarmist about the possibilities of Russian-American cooperation, and strongly favor the policy of cooperation with the Russians on all problems of major importance. The conflicts in Georgia and Azerbaijan are certainly of major importance, as we can see the minute we begin applying the precedent of what's happening there to countries as big as Ukraine or the Baltic states, which have Russian minorities. Russians have been talking about intervening in some of those states in the name of protecting the Russian minorities there. That is an argument for aggression that hasn't been employed in international politics since Hitler went into Czechoslovakia to save the Sudeten Germans. When pressed on these issues, the Russian government says, there may be a few Russian volunteers fighting in these areas, invoking the memory of Vronsky, the hero in *Anna Karenina*. But Russian responsibility for such moves cannot be dismissed as readily as that. We and the Russians ought to address not only comparatively easy problems like nuclear and chemical weapons proliferation, but the

much more touchy and explosive issues of respecting the normal rules of international law with regard to civil war.

I could add other problem areas to the list, but I think I have said enough to demonstrate that there are risks, dangers, and causes for doubt in predicting the future of Russian-American relations. Consider, for example, the field of Russian military production. Our ignorance on this subject today is nearly as great as it was in Soviet times. The best authorities I know in the field of statistics about military production in the Soviet Union and, since 1989-1991, in Russia itself, confirm that the habits of secrecy about military production that were developed to such a fine art under the Soviet Union are still alive and well. They should not be allowed to continue, but should be eliminated by agreement.

In closing, I repeat that it will not be easy to build relations of confident cooperation between Russia and the United States, but that such relations must be pursued with energy and imagination. What is at stake is not simply the relationship between Russia and the United States as a part of our diplomatic array, but whether in the end we can hope to have the state system managed by the great powers acting in concert rather than through a balance of power, one group lined up against another.

II. Proliferation, Deterrence, Stability and Missile Defense

Stability and Ballistic Missile Defenses

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What I am going to address is the identification of issues with regard to deterrence stability and ballistic missile defense. Since there has been such a change in the environment, both in the international spectrum and the military spectrum, with regard to these issues, there has to be new considerations in deterrence because of the fact that the superpowers are no longer confronting one another. We have to redefine the term "stability" in light of this new world situation, and then we have to look at how ballistic missile defense affects deterrence and stability either in a negative or positive way, and how we could exercise our role as the purveyors of this new mission capability to enhance deterrence and stability. So if I could have my next viewgraph, let's move right into the changes in the international environment.

First, the bipolar international system, which all of us used to think so complicated, is in fact a lot less complicated than the system that we have inherited as a result of the ending of the U.S.-Soviet antagonism. One of the biggest issues is the spread of weapons of mass destruction, that is, chemical, biological, and nuclear weapons. It is not only a few powers in the West and the Russians in the East who have the capability now to wage war with weapons of mass destruction. The numbers of countries that have these weapons is growing. Proliferation is of concern to the Russian people as well as to the American people as these weapons are proliferated.

In addition, it is not just the force of communism versus democracy, but the force of nationalism, the force of ethnicity, and the forces of religion that are playing a major role in the world today, and we have to face all of these increasingly destabilizing influence. We also have to consider the power vacuum that was created by the dissolution of the Soviet Union, both in the East and in the West. States that were formerly sustained by one of the super powers are now basically on their own, and thus can be more dangerous than in their prior status as client states, because they don't take the advice of the superpower as something they have to follow. They are independent actors, and as independent actors you have to understand their own ethos and cannot rely on an understanding of the superpower relationship alone.

In the military's security environment, there have also been significant changes. In the Cold War we understood clearly who the actors were, what the objectives were, what the threat was. Our two nations interacted in a very formal way, and generally a very understandable and logical way. In the new environment, we have a growing number of actors, a lot of different interests, and changing alliances and coalitions depending on the international situation. The objectives are basically to promote individual interests of these nations. The threats can be sometimes direct, sometimes indirect.

Consequently, the focus is typically now on regional conflict and the concerns about weapons of mass destruction play a very important part of this focus. Policymaking is often reactive in short term. There is generally a period of peace or an understanding that this is a relatively stable part of the world, such as was the case in Yugoslavia, for example. Then all of a sudden, it breaks loose, and you have to react very quickly, you don't have ten or fifteen years to prepare for the scenario. Interactions are weak, there are very few precedents, the leadership is very often unpredictable, and this makes for a very difficult state of affairs.

What I'd like to do now is talk about the issues of deterrence. Certainly, deterrence between the remaining superpowers, Russia and the United States, is primarily nuclear deterrence, mutually assured destruction, and I think that's the deterrence equation that will still be in effect for many years to come. But the conditions required for deterrence in the sense of the potential use of weapons of mass destruction by others is much more unpredictable and unreliable as we move into post-Cold War in the international environment. The policy of mutual deterrence, the fact that we could counterattack one of our potential adversaries, is not likely to assure stability; for example, we had overwhelming power over Iraq before Saddam Hussein attacked U.S. forces, but Saddam Hussein attacked them just the same. He took the gamble that we would not utilize nuclear superiority to respond to his attack. That gamble, of course, paid off for a time for Saddam Hussein. There are others in the world who see the very small likelihood that either Russia or the United States would use nuclear weapons if it were for any other purpose than national survival. That is not lost on people like Saddam Hussein, Moammar Qaddafi, Kim Jong Il and others. So deterrence now has to be seen as only one of a range of approaches for achieving and maintaining stability.

In the area of stability, I think a new definition is in order. We don't consider stabilization and destabilization vis-à-vis the superpowers we as once did. What you would like to consider is a stable environment in which all nations are moving progressively in a peaceful way towards their mutual advancement. Many international factors are important for stability today, not just how many nuclear weapons or submarines one side has. These issues are economic, regional, and personal (as they concern national leadership priorities), and all of those factors play. According to the definition that we developed stability is a state of relations among nations that is generally consistent with peaceful change and progress, what we would call geopolitical stability.

I would like to discuss what we can do in the missile defense business to contribute to maintaining geopolitical stability, how we might contribute to deterrence and make sure we don't destabilize deterrence. First, one of the areas in which we're emphasizing development today on the U.S. side is what we call TMD, Theater Missile Defense, against missiles like the SCUD.

We feel that active missile defense can be a part of a counterproliferation strategy, just like the Missile Technology Control Regime and other approaches to maintain stability. Ballistic missile defense can enhance international cooperation and stability. The key to that is what we call Multilateral ballistic missile defense, that is, ballistic missile defense in cooperation with the Russians and others to be able to provide our populace and military protection against this weapon.

One of the areas in which we see a significant potential for positive interaction, is in the area of an international early warning system, where we would cooperate with Russia and potentially others to warn any of the potential targets of an attack of missile launches, as well as the points of impact of those missiles so that the nations can at least protect their people passively if they don't have missile defense themselves. This is it's an area where the Commander-in-Chief of Space Command has moved very forcefully and made some strong recommendations.

Ballistic missile defense can also help the nations that have that capability to preserve their freedom of action in the world by strengthening the resolve of coalition partners. We can keep open our response options to crises. I think that, while the Patriot system was not a completely successful ballistic missile defense system, it was able to keep a very powerful coalition together, working to defeat Iraqi aggression. I think Ballistic Missile Defense in that case was a very positive enhancement of the coalition's freedom of action.

BMD can all contribute to the same goal, the maintenance of our resolve in the face of adversary missile attack. In a scenario like the U.S. attack on Tripoli, Moammar Qaddafi said, after the attack, that if he had an intercontinental range ballistic missile, he doubts that the United States would have had the resolve to attack Tripoli conventionally. I wonder whether that would have been the case.

In addition, the ballistic missile defense can dampen incentives to escalate. If the opponent does not see any positive benefit to employing this weapon, if it feels the U.S. or its allies can protect against the ballistic missile, and that our counterattack might even be more strenuous, if he employed a ballistic missile, it might deter him from launching in the first place. Second, by protecting the U.S. homeland, ballistic missile defense can enhance our credibility, our ability to make very strong commitments to our allies around the world. By protecting our power projection forces, ballistic missile defense can enhance their credibility in a deterrent role. The effects of missiles armed with weapons of mass destruction on a conventional force can be significant and can stop a major tactical conventional force in its tracks. Ballistic missile defense then becomes essential for that conventional force to be able to maneuver and to engage the enemy. Most importantly, I would be interested in exploring how we might be able to take advantage of these new international conditions to make the benefits of ballistic missile defense available to nations without threatening international stability.

Proliferation, Deterrence, Stability and Missile Defense

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Introduction: BMD and Stability

The subject of ballistic missile defense (BMD) in the United States has never been far removed from notions concerning the stability of the U.S.-Soviet (now Russian) nuclear deterrence relationship. Public and Congressional debates about BMD have centered on differing views of the effect BMD would have on the "stability" of nuclear deterrence. These differing judgements about BMD and stability were a key element of the debates about the U.S. *Sentinel* BMD program of the mid-to-late 1960s, the *Safeguard* BMD Program of the early 1970s, and every subsequent U.S. BMD initiative, including the Strategic Defense Initiative (SDI). Most recently, in the Missile Defense Act of 1991 Congress specified that U.S. pursuit of BMD must be done in a manner that will "maintain strategic stability."

While the Missile Defense Act does not define "strategic stability," it generally has been understood to be a relationship wherein neither the United States nor the Soviet Union could logically consider overly provocative challenges as a result of their mutual vulnerability to nuclear retaliation. This shared vulnerability was the condition thought to discourage, or deter, severe challenges, and therefore was considered the basis for a "stable" deterrence relationship. The United States came to accept mutual vulnerability to nuclear retaliation in the belief that this condition served to stabilize the U.S.-Soviet deterrence relationship. As Secretary of Defense Harold Brown explicitly stated in 1979:

In the interests of stability, we avoid the capability of eliminating the other side's deterrent, insofar as we might be able to do so. In short, we must be quite willing—as we have been for some time—to accept the principle of mutual deterrence, and design our defense posture in light of that principle[1].

The two major competing views about the affect of BMD on deterrence stability can be outlined briefly. First, critics of BMD have asserted that BMD would degrade stability by threatening to undermine the mutual hostage relationship that was the basis of the U.S.-Soviet mutual deterrence. The logic of this charge is simple: if one or both sides were protected to some extent by defenses, the mutual vulnerability undergirding "stable" mutual deterrence could become suspect. Consequently, BMD came to be labeled as "destabilizing" [2].

In contrast, BMD proponents have asserted that BMD could strengthen stability by protecting U.S. nuclear retaliatory forces, reducing any Soviet hope of achieving a "first-strike" capability, and thereby enhancing the stability of mutual deterrence. In addition, BMD proponents asserted that a *protected* United States could more credibly extend its nuclear deterrence umbrella to its allies, thereby strengthening deterrence stability in Europe.

A similarity in these two positions was the certainty each attached to its assertions concerning the effect BMD would have on stability. That is, each side tended to make definitive statements about the effect BMD would have on stability, although they disagreed on what that would be.

In short, the relationship between stability and BMD in official and public considerations has been a prominent part of the continuing debate about BMD. Generally, this has worked *against* deployment, as the stability arguments against BMD became part and parcel of thinking in the United States about nuclear deterrence.

In part, on the basis of a general confidence in a stable nuclear deterrence relationship—i.e., one based on mutual vulnerability—the United States felt free to forego preparations for the failure of deterrence. The decision largely to forego preparations for the possible failure of nuclear deterrence was not obviously refuted in the lack of any BMD deployment [3]. Indeed, a condition of mutual vulnerability was codified in the 1972 ABM Treaty which essentially prohibited the deployment of robust national missile defenses.

Proliferation, Stability, and the New Strategic Environment

Given the dramatic changes in the international environment since the late 1980s, a broad question of importance is whether traditional notions about the stability of deterrence remain relevant, and more narrowly, whether the traditional "stability critique" leveled against BMD remains persuasive.

There are several prominent features of the emerging international environment that call into question the continuing relevance of past concepts of "strategic stability." Obviously, the breakup of the Soviet Union and Warsaw Pact, and the tentative liberalization of Russia are critical changes. The collapse of the bipolar international system, resulting from the breakup of the Soviet Union, has facilitated the resurfacing of numerous historic disputes that were largely subordinated by the East-West bloc competition of the Cold War. Ongoing conflict in the former Yugoslavia and in much of the former Soviet Union demonstrate that the end of the Cold War's "bloc discipline" has served to unleash again conflict based on nationalism, ethnic animosities, and territorial disputes.

A second factor of importance is the proliferation of weapons of mass destruction and their means of delivery. Proliferation gained visibility in the 1970s, increased in the 1980s, and shows no sign of abating. Saddam Hussein's threatened use of chemical weapons against Israel, Iraq's use of Scud missiles during the Gulf War, and the recent visibility of the North Korean nuclear program and missile sales to the Middle East have brought much greater attention to the problem of proliferation.

Proliferation, in combination with the increased opportunities for regional conflicts, compel us to reconsider much of what we learned about the "stability of deterrence" during the Cold War. The now-traditional U.S.-Soviet model of deterrence essentially was a bipolar construct. The emerging international environment clearly will not be bipolar for the foreseeable future. These factors, taken together, suggest that an increasing number of regional disputes could serve as international flashpoints, and that an increasing number of countries with which the United States may be engaged will be armed with weapons of mass destruction.

Conditions Necessary for Deterrence to Function Predictably

Careful review of historical case studies demonstrate why these recent developments in the international system call into question both the relevance of the U.S.-Soviet "model" of deterrence stability and the great confidence placed in mutual deterrence during the Cold War [4]. In short, there are a number of conditions that must pertain to a deterrence relationship for it to function with any degree of predictable reliability. These conditions involve expectations about how leaders will think, behave, formulate and execute policy decisions, and control forces [5].

It seems that the conditions necessary in these areas for deterrence to "work" were much more likely to have been present in the U.S.-Soviet relationship than in the prospective U.S. relationships with the numerous countries that may need to be deterred by U.S. power in the future. The following list identifies and briefly describes some of these factors.

- Rational leaderships are involved. Cost-benefit calculations are the basis of their decision-making. They are in control of decisions to use force and the execution of those decisions;
- The threatened sanction is communicated effectively to the opponent, is understood, and dominates cost/benefit calculations and behavior (i.e., the "right" sanction is communicated to the right leadership group in such a fashion that it is generally understood and regarded as decisive in cost/benefit calculations);
- There exists a level of mutual understanding and communication between parties sufficient for mutual understanding concerning behavior thresholds, expectations, sanctions, etc. and conveying information about the same;
- The threatened party or parties attribute a level of plausibility to threatened sanction (a degree of "plausibility" need not equate to a credible threat, but execution of the threat must be considered plausible under some circumstances).

It is important to note that the term rationality is used frequently in discussions of deterrence theory. Indeed, deterrence theory, and policies derived from deterrence theory, *require* rational actors.

Yet, the assumption of mutual rationality does not mean that opponents share value structures. Opponents can be rational on their own terms, but have drastically different value structures, giving rise to the perception by each that the other is "irrational."

Rationality does not suggest similar values. Rather it applies to a decision-making process that can accommodate very different values and perspectives. A rational actor is one who has a priority of preferences, engages in an ends-means calculation, makes an

assessment of alternative courses which involve different outcomes, and chooses the alternative considered optimal given the preferred outcome. A rational process does not include the injection of factors such as magic or supernatural forces in decision-making calculation and assessment [6].

Under this definition, behavior that is considered bizarre or horrible need not be irrational. It could involve a preference hierarchy on the part of one leader that is incompatible with the that of another, but still be the result of a "rational" decision-making process. The preferences of the leader are not the issue, it is the process by which that leader chooses the course of behavior intended to attain the preferred objective.

In typical assessments the U.S.-Soviet nuclear deterrence relationship rationality was assumed for both sides, as was the presence of the other key conditions required for deterrence to function predictably: we assumed that there existed a general consensus about the basic fact of a nuclear standoff, and a relatively high level of mutual understanding, familiarity, and effective communication.

In the U.S.-Soviet case, it may have been appropriate to assume these conditions. The U.S.-Soviet deterrence relationship was overseen by leaders who tended to be risk-adverse, and it was built on decades of close interaction—from wartime alliance to Cold War competition. A *relatively* high degree of mutual understanding and empathy emerged. Clearly the two sides devoted considerable intelligence resources over the Post-World War II decades to their mutual close scrutiny and in trying to understand one another. These conditions were optimal for deterrence because they probably served to help reduce the chances of misunderstanding and miscalculation.

Yet, even here, mutual misunderstanding and misjudgements led to one or possibly two crises with the potential for nuclear escalation, the 1962 Cuban Missile Crisis and the 1973 Yom Kippur War. Even the "management" of the Cuban Missile Crisis, typically viewed as a triumph of U.S. deterrence, reflects those dangers. Commenting on recent open discussions of the crisis by participants, former Secretary of Defense Robert McNamara has noted, "how close the planet came to nuclear disaster . . . It was a dramatic demonstration of fallibility—of the degree to which all parties were captives of misinformation, misjudgement and miscalculation" [7]. And, as late as 1983, the Soviet Union appears to have been sufficiently confused about U.S. modes of behavior and decision-making to have interpreted some U.S. actions as active preparation for nuclear war and to have engaged in responsive preparations [8].

If the stability of deterrence was challenged under these seemingly optimal conditions of mutual scrutiny and understanding, it is reasonable to conclude that deterrence as a policy is likely to be less reliable in the future when the United States confronts countries with which it is far less familiar, can not anticipate the leaders' value hierarchy, has few if any proven channels of communication, and shares fewer basic assumptions about the relationship.

The recent Gulf War is instructive in this regard. U.S. Ambassador to Iraq, April Glaspie has acknowledged that, "we didn't understand Saddam Hussein" [9]. That lack of understanding led the U.S. to misjudge Saddam's likely behavior. Glaspie blames Saddam for the fact that the United States was surprised by his actions: "We foolishly did not realize he was stupid, that he did not believe our clear and repeated warning that we would support our vital interests" [10]. This statement suggests that only "stupidity" on the part of Saddam Hussein could explain why he did not behave the way the U.S.

expected him to behave. In reality, Saddam Hussein almost certainly was operating from within a framework of values and objectives not well understood by the United States. As a result, Saddam's behavior could not be predicted—it seemed senseless or "stupid." A U.S. policy of deterrence was unlikely to work under such circumstances. This example underscores the extreme difficulty of establishing an effective deterrence relationship in the absence of considerable understanding and empathy for the opposing leadership.

Historically we know that miscommunication and misunderstanding can undermine the reliable functioning of deterrence. In numerous case studies of "real world" crises, the conditions for deterrence are partially or wholly absent: different interpretations as to what is "rational" behavior have led to mistakes and miscalculations, and ultimately to wars that "should" have been deterred had all parties been well-informed, well-understood, and communicating; governmental processes for providing leaders with information necessary for an informed decision have been faulty; leaders have lost control of military forces; expectations and definitions of expected costs and benefits have been very different; and communications have been poor or non-existent [11]. As Professor Robert O'Neill has observed, "Many of those who initiate wars either do not understand what they are doing or fail to realize the size of the gamble they are taking" [12].

Historical studies suggest that misinformation, misunderstanding, miscalculation, misjudgement, and miscommunication are frequent in "real world" international relations. Consequently, it can be a dreadful error to presuppose the mutually well-informed and calculating behavior assumed in deterrence theory and the traditional U.S.-Soviet model of deterrence [13]. A conclusion consistent with this historical analysis was reached relatively early in the nuclear era by the Group for the Advancement of Psychiatry. This professional organization of psychiatrists concluded in a report on deterrence that the long-range prospects for the success of deterrence must be poor because the concept of well-informed, rational and coolly-calculating decision-making was based on "dubious psychological assumptions" [14].

Some respond to the contention that deterrence is essentially unreliable by observing wisely that the absence of war between the United States and the Soviet Union over four decades of Cold War "prove" that *nuclear* deterrence can work reliably. Again history may be instructive.

First, it should be recalled that there were four decades of general peace between the ending of the Franco-Prussian War of 1871 and the outbreak of World War I—a period of considerable great power friction and opportunity for conflict. The point, of course, is that deterrence may *appear* to be functioning effectively, based on the absence of war, only to demonstrably fail during a period of extreme international crisis when its effectiveness is important.

Second, could those factors, which in the past have contributed to the failure of deterrence and the outbreak of war, operate in the *nuclear age*? The answer has to be: yes. The introduction of nuclear weapons can not remove the human capacity to behave irrationally and/or make profound mistakes.

The advent of nuclear weapons introduced the unique possibility of geographically widespread and rapid destruction. Some suggest that the unique magnitude of nuclear devastation should now make deterrence reliable, even if it was not in the pre-nuclear period [15]. While the actual possibility of widespread and rapid destruction is new, its

expectation is not. Leaders in the past have expected then-modern military means to be so destructive as to threaten civilization if ever used. And, of course, the prospect of rapid societal annihilation on a localized basis has confronted leaders for thousands of years. For some city states of antiquity, utter destruction by military force did take place. As a leader of the Persian city of Bakhara advised regarding the approach of Ghengis Khan and the Golden Horde, "Be silent, it is the wind of God's omnipotence that bloweth, and we have no power to speak" [16]. That is, in the past, leaders have known or believed that their decisions would affect the probability of utter societal destruction, at least for their society. That prospect, however, did not render deterrence a reliable policy for peacekeeping.

In more recent cases, leaders have expected conventional war to involve the type of destruction we now associate with nuclear war. For example, as mentioned above, in the 1930s the British political elite anticipated that air warfare would be similar to what we anticipate of nuclear warfare. A comment very instructive in this regard comes from former British Prime Minister Harold MacMillan's memoirs:

Among other deterrents of war in 1938, expert advice had indicated that bombing of London and the great cities would lead to casualties of the order of hundreds of thousands or even millions within a few weeks. We thought of air warfare in 1939 rather as people think of nuclear warfare today [17].

Indeed, a concept of mutual deterrence emerged in British writings during the 1930s that is strikingly similar to current concepts of nuclear deterrence. The notion, of course, was that mutual expectations of the destruction resulting from then-modern airpower, "a horror unparalleled in the grim annals of war," would serve to deter war. As a British 1938 text on air power demonstrates, the mutual potential for air attack was thought to hold the prospect for mutual deterrence.

The very magnitude of the disaster that is possible may prove to be a restraining influence. Because the riposte is certain, because it cannot be parried, a belligerent will think twice and again before he initiates a mode of warfare the final outcome of which is incalculable. The deterrence influence may, indeed, be greater than that. It may tend to prevent not only raids on cities but resort to war in any shape or form...

At present air attack is regarded as a menace, a withheld thunderbolt, an impending calamity. All nations fear it. For the very reason it should be a deterrent influence against war [18].

Clearly, the expectation of rapid and widespread devastation is not new to the nuclear age, nor is the hope that mutual deterrence would result from that expectation.

Consequently, the introduction of nuclear weapons has not necessarily changed the degree of concern with which leaders approach issues of war and peace. This is because leaders in the past have either incorrectly anticipated nuclear-like levels of destruction; or they correctly anticipated the possibility that their society could be destroyed utterly.

Whether leaders' expectations of vast destruction proved to be accurate or exaggerated, in neither case did such expectations render deterrence reliable.

Some Selected Historical Anecdotes

Numerous case studies support the contention that the conditions necessary for deterrence to function reliably frequently are absent in international crises. Citing several illustrates the point.

Czar Nicholas' thinking at the time of the Russo-Japanese War of 1904 demonstrates that one of the factors leading to the outbreak of war was the Czar's irrational and bigoted views about the Japanese. In Czar Nicholas' mind, it was unfathomable that a non-European power would dare to attack imperial Russia. In fact, prior to the outbreak of the war, the German Kaiser warned the Czar that he would face war with the Japanese. The Czar's response was that there could be no war because he would not permit it. According to Count Witte, a member of the Czar's Court, "What he meant, apparently, was that Russia would not declare war and that Japan would not dare it" [19]. In this case, rationality and informed decision-making was impaired by the low esteem in which the Czar held the Japanese.

Immediately prior to World War I, the German Kaiser Wilhelm II believed that possibly Russia and certainly Great Britain would not become involved in war. There is some evidence that the German Foreign Ministry skewed information to the Kaiser in the direction that was thought to fit his desires—particularly that Britain would not become involved. Karl Max Lichnowsky, Germany's Ambassador to London, advised to the contrary, but his messages went largely unheard and unheeded. When the Kaiser finally realized that Britain would join against him, he is reported to have declared that Germany, "would hold the line, whatever the cost." "We may be destroyed, but England shall lose India" [20]. The fragility of the deterrence model is demonstrated by both the apparent fact that the Kaiser had deliberately been misled about Britain's intentions by his Foreign Ministry, and his lack of a reasonable "cost-benefit" calculation in response.

Another example of how misjudgments can lead to war when deterrence, logically, should have kept the peace, can be found in the expectations of General Galtieri, the head of the Junta in Argentina during the Falklands War of 1982. Following the war, Gen. Galtieri was asked "Didn't Argentina see the likelihood of the British responding to the invasion as they did?" Galtieri responded that he had assumed some possibility of a strong British reaction, but he judged the probability of such to be very low. He went on to observe, "Why should a country situated in the heart of Europe care so much for some islands located far away in the Atlantic Ocean; in addition, islands which do not serve any national interest? It seems so senseless to me" [21].

Thus, Prime Minister Thatcher's reaction to the invasion which appeared reasonable and even necessary to the British, seemed, "senseless" to Gen. Galtieri. Again, basic misjudgments of the opponent appear to have contributed to a war that otherwise might have been deterred. It should be noted that the British reading of the situation was at least as inaccurate as Galtieri's, and probably contributed in its own way to the ultimate outbreak of war.

A final example of the effect of misjudgment on decisions for peace or war involves the U.S. The following quotations are most instructive. At the point when Prime Minister Tojo Hideki told the Emperor that, "Our empire has no alternative but to begin war," Assistant Secretary of State Acheson was advising the President persuasively that war was unlikely because, "No rational Japanese could believe an attack on us could result in anything but disaster for his country" [22]. Acheson could have joined with Galtieri in observing how "senseless" was the opponent's ultimate behavior. That, of course, is the point: deterrence theory typically assumes a rational, reasonable, and to a large extent, predictable opponent. History demonstrates, however, that opponents often do not understand one another well and therefore behave in ways that appear "senseless" to one another. These types of factors tend to lead to misjudgments, which can facilitate decisions that lead to war—even when each party involved believes, by its own light, that it is calculating rationally and behaving reasonably.

Implications for the Traditional U.S. Approach to Deterrence

The historical examples described briefly above suggest the difficulties involved in attempting to establish a deterrence relationship that can be considered reliable: the many conditions necessary for deterrence to function predictably simply are not easily met. The emerging features of the international system, particularly the re-emergence of old hostilities and causes of conflict, and proliferation, complicate the problem for the United States. The number of countries that the United States will hope to deter will increase; and these countries are unlikely to be familiar to or have great familiarity with the United States. Consequently, there is likely to be an increase in the instances where the conditions necessary for predictable deterrence will not be present.

The difficulties involved in attempting to establish a reliable deterrence relationship are best illustrated by identifying the "checklist" of questions U.S. leaders would have to address before a predictable policy of deterrence could reasonably be attempted [23]:

- Do you know whom you are attempting to deter?
- Do they control policy decisions and military actions? If so, to what degree?
- Are you sufficiently familiar with their decision-making process that you can have some confidence that you can affect it?
- Can you approximate/understand the decision-maker's value hierarchy and rationality? Can you understand even approximately the opponent's will or resolve in challenging you?
- Do you know the types of threats that would dominate the opponent's decision-making and value hierarchy?
- Do you know the opposing leadership's value "thresholds" sufficiently well to avoid threats that might make it "undeterrable?"
- Do you know how to communicate reliably with the opponent?
- Have you identified key cultural/idiosyncratic factors, and how to accommodate these in your deterrence policy?
- Do you know the level of *credibility* likely to be ascribed to your threats by the opponent? Do you know what factors determine the level of credibility of your threat in your opponent's view, and can you affect that level?

This is a daunting list of questions. Yet, unless some degree of confidence can be placed in answers to each of these questions, a policy of deterrence can not function predictably. A policy of deterrence may still "work," but there can be no basis for placing confidence in it. This situation is far removed from the traditional view that the U.S.-Soviet nuclear deterrence relationship could be considered stable so long as a condition of mutual vulnerability to retaliation could be maintained.

Implications for Ballistic Missile Defense

There are implications of this discussion about deterrence for many areas of U.S. defense and foreign policy. It could affect thinking about alliance relations, intelligence requirements, offensive and defensive force requirements, and arms control policies. The purpose of this discussion, however, is to identify some of the implications for BMD.

As mentioned above, the traditional U.S. approach to nuclear deterrence has not been sympathetic to the deployment of BMD—largely based on the charge that BMD would destabilize the U.S.-Soviet deterrence relationship. That relationship has ended, however, and the character of a deterrence policy suitable to the emerging strategic environment is yet to be established. What is clear is that the stability of deterrence, as it has come to be known, will be less reliable and less predictable.

There are several important implications of this conclusion for BMD. First, if deterrence fails or simply fails to apply in a future crisis, BMD may provide protection against the subsequent use of ballistic missiles. This "safety net" against deterrence failure may be extremely important in some potential situations, such as when the opponent is armed with a relatively small and primitive arsenal of missiles and weapons of mass destruction. BMD, in this case, might provide effective protection for urban areas that otherwise would be vulnerable.

In addition to the benefit of BMD in terms of lives prospectively saved, BMD could provide important political, military and economic benefits. For example, the political importance of the Scud attacks against Israel during the Gulf War was sufficient to divert a substantial amount of the Coalition's war effort to the "Scud hunt." This was the case for critical political reasons, as Iraqi Scuds posed little by way of an actual military threat. The lesson learned by the British and U.S. air forces in World War II (attacking V-1 and V-2 sites) was learned anew during the Gulf War: political leaders in democracies feel the need to respond to attacks against the civilian population, even if those attacks pose a minor military threat. In both the World War II case and again during the Gulf War, unopposed missile attacks diverted the war effort of the victim, and thereby had an considerable, if indirect effect on the use of military resources.

The economic impact of "militarily useless" missile attacks against civilian centers can also have a severe economic impact. During the Iranian-Iraqi "War of the Cities" for example, Iraqi missile attacks essentially shut down the Iranian war economy as Iranian workers sought refuge from the missile threat. Israel faced a similar problem during the early days of the Gulf War, prior to the arrival of Patriot, as civilians with gas masks frequently were confined to or close by their shelters.

If deterrence fails in the future, or fails to apply, defeating the opponent's missile capabilities may be extremely important. BMD could provide a unique contribution to this objective.

Second, BMD may contribute to the credibility of the perceived willingness of the United States and its allies to become involved in a regional conflict—thereby possibly contributing to regional stability. In the absence of BMD, a proliferant state may believe that its missile threat could deter the West from responding to regional aggression, essentially giving it a "free hand" to pursue a provocative course. BMD, by providing protection against missile threats, could limit the coercive/deterrent value of a regional aggressor's missile arsenal vis-a-vis the West.

Third, BMD could help alleviate concerns about surprise missile strikes deep in a country's rear. In anticipation of deterrence failure or irrelevance, the threat posed by an opponent's missiles could encourage preemptive or preventive strikes. In this case, BMD could serve as a relatively benign alternative to such a course, and help moderate the incentives in a crisis to engage in preemption. BMD could also serve to increase decision-making time in any consideration of preemptive strikes by reducing the costs of *not* preempting very early in a crisis. By moderating the incentives and perceived need to preempt, BMD could contribute to moderating a crisis that might otherwise escalate quickly.

Similarly, BMD could serve as a relatively benign alternative to offensive retaliation to an opponent's missile strikes. This too could help "keep the lid on" a conflict—as was seen most notably in Patriot's defense of Israel during the Gulf War.

Finally, international cooperation in the area of BMD may serve as a vehicle to improve the political relations among states, and thereby help to reduce the likelihood that the normal "friction" of international relations will flare into crises. This political role for BMD as a vehicle for broader cooperation may seem far-fetched given the past contentiousness of the U.S.-Soviet dialogue on the issue. It was, however, specifically emphasized by President Boris Yeltsin and other Russian officials in their elaborations on Yeltsin's January 1991 proposal for a cooperative "Global Protection System"[24]. The suggested role for BMD, in this instance, is to strengthen political ties and thereby help contribute to the establishment of a broad "geopolitical stability" that helps to reduce the opportunity for military crisis and the related need for effective deterrence [25].

Conclusions

Deterrence is an inherently unreliable approach to war prevention. This has long been recognized by historians. As A.J.P. Taylor remarked, "A deterrent may work ninety-nine times out of a hundred. On the hundredth time it produces catastrophe."

Nevertheless, during the Cold War, partly by choice and partly out of perceived necessity, the United States came to rely exclusively on the successful functioning of deterrence to provide protection against the Soviet nuclear threat. An entire school of thought about deterrence and "stability" developed that assumed a condition of mutual vulnerability could provide a reliable degree of mutual security. Indeed, mutual deterrence derived from mutual vulnerability came to be regarded as so reliable that

defensive measures—such as BMD—suffered severe criticism on the grounds that they might undermine the stability of deterrence.

The notion, however, that deterrence could be made reliable by mutual nuclear vulnerability is ahistorical, apolitical and ignorant of typical human cognitive frailties, i.e., it makes heroic assumptions about how leaders will behave in crises. It appears not to recognize that deterrence is a psychological function and that decisions about war and peace typically are made by human political leaders—whose decisions are affected by a panoply of environmental and cognitive factors. As Dr. Fred Iklé, the former Under Secretary of Defense for Policy has rightly observed, "In the real world, nuclear forces are built and managed not by two indistinguishable 'sides,' but by very distinct governments and military organizations. These, in turn, are run by people, people who are ignorant of many facts, people who can be gripped by anger or fear, people who make mistakes—sometimes dreadful mistakes" [26].

As fragile as this now-traditional concept of deterrence may be, it may have been less likely to do harm in the U.S.-Soviet context than in most other prospective cases: the U.S.-Soviet relationship probably was optimal for deterrence, for the reasons suggested above.

In the emerging international environment, however, the U.S.-Soviet model of deterrence can not be transferred easily to almost any other prospective antagonistic relationship. This lack of applicability certainly will extend to U.S. relations with many proliferant countries of the developing world, with which—to be generous—the U.S. has only a modest level of familiarity.

The lack of confidence that can reasonably be ascribed to deterrence in future U.S. relations has critical implications across the spectrum of U.S. national security strategy. It has, however, particularly pertinent implications for BMD. Not only does the old "stability critique" against BMD make little sense in the context of U.S. relations with emerging regional powers, the difficulties involved in establishing a reliable deterrence relationship suggest strongly that the U.S. complement its efforts at deterrence and escalation control with preparations for their failure. BMD will have an important role to play in such preparations.

The lack of confidence that can reasonably be ascribed to deterrence in future U.S. relations also suggests that greater attention be applied to measures intended to affect regional frictions before they mature into military conflict. Although it is less clear, BMD may also play an important role in this effort.

Notes

1. *Department of Defense Annual Report Fiscal Year 1980* (Washington D.C.: USGPO, January 25, 1979), p. 61.

2. This notion is reflected in the following statement by Ashton Carter, William Perry and John Steinbruner: "Traditionally, cooperative pursuit of nuclear safety has been mainly through enhancing 'strategic stability,' that is, arranging for each side to have the capability for hefty retaliation to a nuclear first strike with high assurance under all conceivable circumstances. This is a worthy, indeed indispensable, ingredient of nuclear safety. It was pursued with extraordinary energy by both sides in the cold war through unilateral deployments and through cooperation in

arms control...Actions by either side that could be interpreted as upsetting retaliatory stability, for instance, the Soviet SS-18 heavy missile or the U.S. strategic defense initiative, became the bones of contention at the negotiating table." *A New Concept of Cooperative Security* (Washington, D.C., The Brookings Institution, 1992), p. 17.

3. This confidence in the effective functioning of nuclear deterrence has been pervasive in the West. For example, as influential Harvard professors Graham Allison, Albert Carnesale, and Joseph Nye observed, "Under this [deterrence] system the great powers have enjoyed 42 years without general war....We do not believe deterrence soon will fail. In U.S.-Soviet relations, the current nuclear postures have *substantially solved the problem* of deterring deliberate nuclear attack." (Emphasis added). "Defusing The Nuclear Menace," *The Washington Post*, September 4, 1988, p. C-1, C-2. Similarly, Carter, Perry, and Steinbruner have stated that "core deterrence" has become "securely established," and that, "... virtually all plausible varieties of deterrence of such deliberate attack could be underwritten with a fraction of the existing nuclear arsenals." *A New Concept of Cooperative Security*, op. cit., p. 1.

4. Some of this discussion is drawn from, Keith B. Payne, "Deterrence and U.S. Strategic Force Requirements After the Cold War," *Comparative Strategy* (July-September, 1992), pp. 269-282; and, Keith B. Payne and Lawrence Fink, "Deterrence: Gambling On Perfection," *Strategic Review* (Winter 1989), pp. 25-40.

5. A key contributor to the historical analysis of deterrence, Professor Ned Lebow, states the matter starkly: "Research to date indicates that the utility of deterrence is limited to a narrow range of conflicts: those in which adversarial leaders are motivated largely by the prospect of gain rather than by the fear of loss, have the freedom to exercise restraint, are not misled by grossly distorted assessments of the political-military situation, and are vulnerable to the kinds of threats that a would-be deterrer is capable of credibly making. Deterrence must be practiced early on, before an adversary commits itself to a challenge and becomes correspondingly insensitive to warnings that such a course of action is likely to result in disaster. Unless these conditions are met, deterrence will be ineffective or counterproductive". "Deterrence Failure Revisited," *International Security* (Summer 1987), pp. 212-213.

6. In the academic literature there are numerous detailed examinations of rationality as it is applied in deterrence theory. See for example, Frank Zagare, "Rationality And Deterrence," *World Politics*, No. 2, (January 1990), pp. 238-260.

7. Robert McNamara, "Nobody Needs Nukes," *New York Times*, February 23, 1993, p. 21.

8. Oleg Gordievski, a former senior Soviet intelligence officer, has reported that in 1983 Warsaw Pact intelligence was convinced that NATO was prepared to launch a massive surprise attack. See, Gordon Brook-Shepard, *The Storm Birds* (New York: Weidenfeld & Nicolson, 1989) pp. 329-335.

9. Quoted in, Don Oberdorfer, "Glaspie Says Saddam Is Guilty of Deception," *Washington Post*, March 21, 1991, p. A24.

10. *Ibid.*, p. A23.

11. See for example, Peter Karsten, Peter D. Howell and Artis Frances Allen, *Military Threats: A Systematic Historical Analysis of the Determinants of Success*, (Westport, CT: Greenwood Press, 1984); Robert Jervis, Richard Ned Lebow, Janice Stein, *Psychology and Deterrence* (Baltimore, MD: Johns Hopkins University Press, 1985); and Richard Ned Lebow, *Between Peace and War* (Baltimore, MD: Johns Hopkins University Press, 1981), p. 110; Raoul Naroll, Vern L. Bulloch, Frada Naroll, *Military Deterrence In History: A Pilot Cross-Historical Survey* (Albany, N.Y.: State University of New York Press, 1974), pp. 342-343.

12. "The use of Military Force: Constant Factors and New Trends," *The Changing Strategic Landscape*, Part 2, in *Adelphi Papers*, No. 236 (London: IISS, 1989), p. 3.

13. For an extended discussion of this subject see Payne and Fink, "Deterrence: Gambling On Perfection," op. cit., pp. 25-40.
14. Group for the Advancement of Psychiatry, *Psychiatric Aspects of the Prevention of Nuclear War*, Report No. 57 (September 1964), p. 268.
15. Robert Jervis, "The Political Effects of Nuclear Weapons: A Comment," *International Security*, Fall 1988, p. 81.
16. Quoted in Karsten, et al., op. cit., p. 70.
17. Quoted in Uri Bialer, *The Shadow of the Bomber: The Fear of Air Attack and British Politics* (London: Royal Historical Society, 1980), p. 158.
18. J.M. Spaight, *Air Power in the Next War* (London: Geoffrey Bles, 1938), p. 126.
19. *The Memoirs of Count Witte*, trans. and ed. Abraham Yarmolinsky (New York: Doubleday, Page and Co., 1921), p. 121.
20. Quoted in Karsten, et. al., *Military Threats*, pp. 8, 12.
21. Oriana Fallaci, "Galtieri: No Regrets, No Going Back," *The Times*, June 12, 1982, p. 4.
22. Quoted in Scott Sagan, "The Origins of the Pacific War," *Journal of Interdisciplinary History* (Spring 1988), pp. 894, 906.
23. This list was first presented in, Keith B. Payne, *Counter-Proliferation: Deterring Emerging Nuclear Actors*, Presentation at, A Strategic Options Assessments Conference, sponsored by the U.S. Strategic Command, July 7, 1993, Dougherty Conference Center, Offutt Air Force Base.
24. See for example the interview of Yeltsin by an ITAR-TASS correspondent, in TASS, 0538 GMT, February 1, 1992, in FBIS, Daily Report: Central Eurasia, February 3, 1992, pp. 21-22. See also the views of Vladimir Lukin, formerly the chairman of the International Affairs Committee of Russia's Supreme Soviet and more recently, Russia's Ambassador to the United States, in, Radio Rossi, "Information-Analytical" Program, 0800 GMT, October 1, 1991, in FBIS, *Daily Report: Soviet Union*, October 1, 1991, p. 50.
25. For a recent discussion of "geopolitical stability" see, The Stability Working Group, *Stability and Ballistic Missile Defenses*, a report prepared for the Ballistic Missile Defense Organization, Office of the Deputy for Strategic Relations, September 1993.
26. "Nuclear Strategy: Can There Be a Happy Ending?" *Foreign Affairs* (Spring 1985), p. 810.

Stability and Deterrence Under Contemporary Conditions and the Role of Ballistic Missile Defense

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The concept of strategic stability after the end of the "Cold War" has changed dramatically. If earlier it meant barring any meaningful change in the balance of forces between two primary military-political groupings as a result of the use (or threat of use) of nuclear and/or conventional military force, then today it is a different problem. It means, above all else, a barring of the outbreak of regional and local conflicts that are capable either of undermining the normal functioning of an economy as a result of the breaking of ties, or leading to a situation where a threat to the territory of developing countries, or to their vital interests, arises—possibly a combination of both.

It is especially dangerous that the military-technical capabilities of new regional power centers have sharply increased and continue to grow rapidly—some of these, for example China, aspire to a global role (at least in the near term). A very important factor is the process of proliferation of nuclear and missile technologies which, from my perspective, has already become virtually irreversible. In a number of regions of the world—in the Near and Middle East and on the South Asian subcontinent—a situation has arisen where nuclear and missile weapons are already in the hands of countries with extremely sharp disagreements who find themselves in continual conflict or pre-conflict situations.

To our great regret, in both Russia and in many countries of the West, a particular aberration has arisen—the disappearance of the traditional enemies; tied to this is a change in the scale and character of the threat which results from the absence of threat. As a matter of fact the situation appears entirely unique. During the Cold War period, the threat had a well-defined character and was strongly marked by geography. Today, in view of the extremely confused geopolitical situation and the increase in the number of potential sources of instability and conflicts, the unpredictability in the development of events in various regions of the world and the probable impact of these developments on regional—and in a variety of cases—global situations, it is practically impossible to predict when and where a new threat (or threats) will arise.

In connection with this, the totally different character of political and military activity demands maximum flexibility and readiness, on the part of interested countries, to engage in joint actions in unexpected situations and in different directions.

The increasing interdependence of the economies of the developing and developed countries, the growing number of threats, the proliferation of modern weapons, etc., has led to a situation where no one country which is drawn—directly or indirectly—into the affairs of different regions can maintain its own security alone. This is happening both to

Russia and the U.S., and more so, to the European countries and to Japan. Hence, the real necessity for joint actions to maintain stability, including the use of political and economic and, where necessary, even military means.

Under these new conditions, deterrence is also changing in its character. Now its function consists not in supporting a situation of "Mutual Assured Destruction," but in not allowing the use of military force between countries and regimes which present threats to stability. Under this concept, the nuclear weapon preserves its exclusive role. Meanwhile, in contrast to the time when the impossibility of the use of nuclear weapons was the basis for the concept of deterrence, under the new conditions the assumption of their use by a number of countries—although on a limited scale—should lay at its base. The threat of local wars of a new type consists exactly of this. The nuclear "ceiling" of Russia and the U.S. can still be significantly lowered, but only to the level at which we are allowed to preserve an obvious preponderance over probable sources of threat.

The tasks of organizing permanent cooperation between Russia and the U.S. in the sphere of security presuppose making inevitable, fundamental changes in our nuclear relations. Until then, our mutual nuclear stalemate will not be concluded either politically, but in purely practical terms, it will remain the basis for our mutual suspicions. The nuclear weapons of our countries gradually should become an element of the common structure of security, just as they have, in our time, with the U.S. and both of its Western European nuclear partners. In such a case, the national "ceilings" can be significantly lower than they would be under autonomous activity. Accordingly, it will be significantly more effective in political and military-political terms to decide the tasks of nuclear deterrence.

At the same time, so-called "conventional strategic deterrence" has become a real concept. It probably cannot fully replace nuclear deterrence, but in a number of cases it can supplement it, and even possibly be fully sufficient.

The development of BMD systems has become a reality. I do not agree with those who think that TMD should be limited. Such a system is probably satisfactory in the near term when the proliferation of long-range missiles will not have occurred. However, there is already sufficient evidence to suggest that missiles with a range of 1,000–2,000 km can appear in the arsenals of a number of countries within a relatively short span of time. It is impossible to exclude the appearance of missiles with even greater ranges. It is even more realistic to assume the use of cruise missiles.

It is impossible that the answer to the question—Should we develop or not develop a BMD system?—has depended on a treaty which was concluded in another political and technological epoch. Now the fundamental danger demands active measures in this direction.

The creation of an effective BMD system, in combination with the modernization of nuclear arsenals of our countries, appears to be essential factors in deterrence. Across a whole range of events, the availability of such systems can sharply limit both the scale of the very conflict, as well as the level of the inevitable involvement of our countries in defending our partners from the threat of missile, or nuclear missile, blackmail.

The joint creation of a BMD system will, in large part, enable the development of a common nuclear strategy and the creation of the material base for interdependence in the sphere of security. More importantly, I think, without a defense system, the road to such a strategy will be significantly longer and more difficult.

In many countries there exists great interest in creating ballistic missile defenses. Currently, we are basically discussing TMD, which is intended for defense against Scud-type missiles. Nevertheless, this gives us the ability to create the infrastructure for cooperation, which can be used in the future. Aside from this, it provides us with possibilities for organizing long-term joint efforts of a large group of countries in the sphere of security, creating additional capabilities for supporting the development of cooperation and interdependence, including in potentially complex regions.

The creation of a ballistic missile defense system should play an important role, from the perspective of involving the military industries of our countries in broad cooperation. This, in and of itself, is a very important element in our new relations and allows for the development of new technologies in the military sphere with fewer expenditures. For the military industry in Russia this will mean its much-needed entry into new markets and consolidation of its new military-political orientation.

Nonproliferation and Counterproliferation: The Role of BMD

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It seems completely natural to me that the problem of BMD is being discussed at this seminar, not in some military-political vacuum, but in the context of such concepts as stability, deterrence and especially nonproliferation, which are, in and of themselves, fundamentally changing in the post-Cold War period. Attention should be paid to the fact that the work of Dr. Keith Payne, which I find extremely interesting and stimulating, is being conducted in the same spirit. In particular, the creation of a ballistic missile defense system is considered not as an end in itself, but as one element of a policy of strengthening strategic (and geopolitical) stability and also of a regime of nonproliferation of weapons of mass destruction (WMD) and missiles for their delivery.

The problem of nonproliferation has emerged today as one of the priority tasks of world policy. Its topicality has been illustrated recently by the actions of North Korea, which had announced its intention of leaving the Nuclear Nonproliferation Treaty (NPT), and the continuing undecided position of Ukraine with respect to nuclear weapons on its territory.

Russia's principled adherence to the task of nonproliferation has been expressed in one of the first announcements made by President B.N. Yeltsin on January 29, 1992, and the many subsequent statements made by the Russian leadership.

The following are the basic principles of Russian policy in the sphere of nuclear nonproliferation.

Basic Principles

First, the disintegration of the USSR should not lead to an increase in the number of nuclear powers, as they are defined in the 1968 NPT. Accordingly, we proceed from the view that all the former republics of the USSR, except Russia which is the successor to the Soviet Union in terms of this Treaty, should adhere to it as nonnuclear states and conclude safeguard agreements with the IAEA. We feel that the temporary deployment of nuclear weapons on the territories of Ukraine, Belarus, and Kazakhstan is not an obstacle to such adherence, considering their commitments to become nuclear-free states. As we understand it, our approach is in full accordance with the position of other state-signatories to the Treaty, including its depositaries; it flows from the understandings between the countries of the Commonwealth of Independent States (CIS), reached in Alma-Ata and Minsk, and also from the Lisbon Protocol. We are counting on support for

increasing pressure on Kiev for rapid adoption by Ukraine of nuclear-free status, thus barring it from receipt, under any pretenses, of operational control over the nuclear weapons.

Second, the existing international regime of nuclear nonproliferation, the foundation of which is the 1968 Treaty, should be strengthened through a combination of agreed upon measures in nuclear disarmament, first of all in the limitation of nuclear tests and measures of control and confidence building. In particular, we see the need for successful conduct of a conference in 1995 at which will be decided the long term fate of the NPT. At this conference, Russia intends to achieve an indefinite extension of the provisions of this Treaty. We highly value the role of the IAEA in enforcing observance of the NPT and support the efforts taken by the Agency in perfecting the system of safeguards.

Third, it is necessary to deprive nuclear weapons of their "attractiveness." In the world of agreements on regional security, there exists a need for political conditions which lower tensions and will allow those countries, which still have not done this, to forswear the "nuclear option" and join the NPT Treaty. In this context, Russia intends, in particular, to continue taking an active part in efforts to regulate the situation in the Middle East and other "hot spots."

Fourth, there should emerge from Russia neither the threat of use of nuclear weapons, nor the danger of their proliferation. Russia fully intends to conduct a policy which meets international standards in the sphere of nuclear export. We have frequently insisted on "full-scope safeguards" in this sphere, and intend very soon to complete the adoption of domestic internal laws which will strictly regulate exports from Russia of materials, equipment, technology and services, which could be used for creating nuclear weapons, and also "dual use" items. The creation of an effective system of state control of such exports is being concluded. The Russian leadership also pays particular attention to maintaining essential socio-economic and legal conditions, which in practice would counteract the flight of our nuclear specialists abroad. In this context, it would be of great importance if Russia, Germany, and other members of the EC, the U.S. and Japan created an international scientific center in Moscow. An important direction in the joint projects undertaken by this center will be maintaining favorable conditions for the "conversion" of the work of scientists and their knowledge for peaceful purposes, in particular, in connection with increasing the safety of nuclear energy, and clearing large-scale industrial regions of the country of radioactive contamination.

Shortcomings in the International Regimes

One of the most serious shortcomings in the current regime of nonproliferation of weapons of mass destruction is the absence in existing treaties of provisions ensuring the creation of an effective mechanism for verification of the development of prototypes of specific types of weapons of mass destruction and their components. The existing prerogatives are limited to control over the use of nuclear materials and installations, and the official sale or transfer of products and technologies to other countries.

The system of IAEA safeguards, although it is reinforced by the regime of special inspections, is inadequate for the task of preventing attempts to create nuclear weapons. The IAEA special inspections can be undertaken only, for example, after receipt of

positive information of violations having occurred. This requirement makes conducting such an IAEA inspection a rare occurrence and this creates a political "threshold of permission" for their use. Besides this, one can anticipate significant time delays between the request for a special inspection and the actual arrival of an IAEA inspection team in the country.

Aside from this, the existing IAEA safeguards do not fully ensure timely warning of the dispersion of plutonium and highly enriched uranium in civilian reactors for military purposes which could create the preconditions for theft of nuclear raw materials.

The terms of the Universal Basel Convention for control over the transportation of dangerous waste are very weak. In this context, in particular, attention is drawn to the well-known Japanese "plutonium project," developed with the goal of accumulating in the country colossal quantities of fissionable material.

The convention on prohibition of biological weapons does not consider any control mechanism. On the positive side, in this sense, the convention on chemical weapons is different. Thus, the existing international mechanisms and means in use are not sufficiently effective for guaranteeing the institutionalization of a nonproliferation regime. There is an obvious real need for the perfection of such mechanisms and means.

Existing treaties, or those being negotiated, which limit the proliferation of WMD, don't contain uniform provisions on what to do with already existing technologies for the development of nuclear, chemical or biological weapons of those states which are signatories to the Treaty. This places the current nonproliferation regime in an ambiguous and uncertain situation with respect to the final fate of potentially existing weapons components.

Proposed sanctions against violators of the nonproliferation regime are insufficiently effective. In effect, the main direction of such sanctions is denial by international economic organizations of financial assistance to countries where there is proof or grave suspicions of producing WMD. Among those most probable candidates for creating WMD in the Third World, however, are countries which are not experiencing shortages in liquid capital, are not in need of help from the IMF or IBRD and, finally, are not vulnerable to these sanctions, although they can nevertheless have a definite deterring effect.

However, it is impossible to close your eyes to the fact that the use of "comprehensive" sanctions, including economic blockades, adversely affects the interests of common people. But, as a rule, these actions will not increase internal pressure on the leadership to force it to abandon the production of WMD.

Finally, a serious shortcoming is the lack of access for all members of the international community to information about the real state of affairs in specific countries. Insufficient transparency excludes the possibility of making the nonproliferation regime comprehensive and adequate for the real threat.

The effectiveness of mechanisms for limiting the proliferation of WMD can be maintained only when they are based on a coincidence of goals of each separate state with the goals of the world community. Much in this area is dependent upon how decidedly the leading states will finally leave behind the stereotypes of the past, i.e., the division of "threshold" and "near threshold" states into "friendly" and "unfriendly" states with all the consequences of such a political double standard. Russia has started down this path and expects the same of its partners.

In contrast with the well-respected Professor S. Blagovolin, I do not think that the situation in the sphere of nonproliferation has already reach a point beyond control. But such a danger, I agree, has increased recently. Thus, coordinated measures to combat the proliferation of WMD and their missile delivery means must be energetically pursued.

"Passive" and "Active" Measures

Recently, it has become the convention to divide such measures into two basic categories: "passive" (nonproliferation) and "active" (counterproliferation).

The first category usually includes the following:

- Progressive strengthening of existing nonproliferation regimes, primarily the 1968 NPT Treaty;

- Further steps in the sphere of nuclear disarmament including, above all, a ban on nuclear weapons testing (agreements reached in this context, including the START II Treaty, it should be recognized, are inadequate);

- Political measures to remove the incentives to acquire nuclear weapons, including the lessening of tensions and settlement of conflict situations in various regions of the world;

- The development and strengthening of the system of IAEA safeguards;

- Strengthening and harmonizing national systems of export controls;

- Measures taken to halt the proliferation of scientific expertise and knowledge in the sphere of WMD and their missile delivery systems through the creation of socio-economic and legal conditions which prevent the "export" of nuclear specialists to third countries.

The second category (counterproliferation), which, by the way, is significantly less well-formulated, can include the following:

- Increasing the effectiveness of control over proliferation, mutual exchange of data received through NTM, institutionalizing for the purposes of an international regime of "Open Skies" and of new technologies and apparatuses of export control and nonproliferation, and cooperation of the intelligence services of various countries;

- Joint political rebuffs by the nuclear powers of the nuclear ambitions of third countries;

- Development of institutionalization of economic and legal sanctions against violators of the nonproliferation regimes (Pakistan, Libya);

- Institutionalization of compulsory inspections for such violators (Iraq);

- Indirect use of military (including nuclear) force against violators as a form of implementation of new variant of the "deterrence" doctrine applied to nonproliferation (it is apparent that we must conduct international analysis of this issue);

- Formulating variants and scenarios for the conduct of nuclear powers in the event that such a form of deterrence fails, that is, variants of direct uses of military force (studies of this concept are also needed);

- Joint research in technology of remote disarmament (rendering harmless, or disabling) of nuclear warheads, conceivably in the hands of terrorists.

To this range of measures, the possibility for creation of BMD is also added.

It is obvious that all these measures can work only as a complex; a national system of export control, as experiences shows, is not a panacea. In and of itself, export controls cannot stop the proliferation of WMD. This is confirmed by the fact that Iran, Pakistan, North Korea and other acquirers of WMD have circumvented them. Besides this, strict export controls in many cases lead to the rapid creation of indigenous production or the search for alternative sources for acquiring needed materials.

Objects and Subjects of Nonproliferation

The end of the Cold War led to changes in the objects and subjects of nonproliferation policy. Now the old division of states into East and West has been replaced by a more complex and more finely graded classification which includes:

- (1) The Coordinating States—these states (for example, the U.S. and Russia) that are fully or partially members of all agreements on export control (the Nuclear Suppliers Group, the Missile Technology Control Regime, the Australia Group, COCOM).
- (2) The Cooperating States—these states (for example, China) participate in some, but not all, treaties on export control, and have announced their intention to join, in the future, all four or cooperate with them.
- (3) The Sensitive States—some of these states (for example, India) have the legal and administrative basis for export control, but at this time perceive being drawn into the existing arrangements on export control as an infringement of their security and also of limited political and economic utility; these states currently do not directly threaten the security of the Coordinating States.
- (4) The Threatening States—these states (for example, Iran and Iraq) are in need of restricted technologies; they produce them and in some cases export them, going against the existing mechanisms of export control and implementing a security policy which threatens the interests of the Coordinating States.
- (5) The Peripheral States—all the remaining states.

The policy of the Coordinating States in the sphere of trade, technology transfer and export control in relation to different groups of states should be implemented differently. For example, the policy of the U.S. and Russia should conform to the following pattern:

- (1) Other Coordinating States—to operate on the basis of no restrictions.
- (2) Cooperating States—to introduce some elements of control and maintain many of the conditions.
- (3) Sensitive States—to introduce many elements of control and maintain many of the conditions.
- (4) Threatening States—to introduce maximum control and embargo.

Practical stimuli and comprehensive procedures should be used so that the Cooperative, Sensitive and Threatening States can shift to a more desirable position

toward the Coordinating or other States. In COCOM, the very first procedures should include:

- (1) A pledge to take corresponding measures of export control, including adoption of a system of import certification/control of delivery.
- (2) Guaranteeing that strategic goods and technologies, imported from COCOM and Cooperating countries, will be directed exclusively to civilian purposes.
- (3) Assigning guarantees of end use which would be supported by national governments and be confirmed by inquiries to the exporting country.
- (4) Agreeing to on-site inspections upon request of the exporting country.

The creation of a comprehensive system of export control can lead to the dismantling of prohibitive COCOM lists, as was done in the case of Hungary.

The Nonproliferation Treaty

As is well known, the NPT will expire in 1995. In that year, it is planned to hold a conference on extending the Treaty. It is necessary to do all that is required not only to extend it, but to use this favorable opportunity to jointly find a path to increasing its effectiveness. In connection with this, it appears necessary to:

- (1) Fully clarify the question of the obligations in the treaty to "not manufacture" nuclear weapons by simply including a full ban on their manufacture, the pursuit of associated RDT&E, and the creation of warhead components.

Such a prohibition on proliferation would be aimed at all nonnuclear country members of the Treaty and states which have signed other agreements on nonproliferation.

Before "unofficially" joining the NPT, possessors of nuclear weapons, "threshold" and "near threshold" countries would have to make a special commitment to fully disclose activities, directed toward the creation or possession of nuclear weapons in the past. Besides this, such states would have to show that they are not conducting further work in the creation of their own nuclear weapons; that they are reforming and redirecting efforts of associated scientific and technical groups, liquidating or rendering harmless installations where work was performed in creating a nuclear weapon, and also fully destroying all earlier manufactured (or inherited) components of warheads. This naturally also applies to those republics of the former USSR which still have not completed fulfillment of the START Treaty.

For verification of stated declarations in international agreements, on its own initiative, the inspected country in a show of good will should undergo a series of special inspections. Other countries, in the absence of information about work being conducted on nuclear weapons, would be considered observers of the regime.

Consolidating such an expanded interpretation of the NPT and other agreements could become one of the priority tasks of the IAEA. This problem might be placed before the Nuclear Suppliers Group, and also in the course of negotiations between the "Big Five." It might be discussed at the UN Security Council.

- (2) Formulate and adopt an improved system of verification, permitting us to reliably ascertain observance of bans on developing nuclear weapons and also basic forms of

nuclear materials. The main instrument for maintaining such control should be the IAEA, whose functions in this case should be further specified and expanded.

An improved mechanism for NPT verification can be a proposed inspection regime of nuclear installations "under suspicion." Such a regime can be made standard for all state signatories of the NPT which had, or have on their territories, nuclear objects not covered earlier under IAEA safeguards and also for countries suspected of developing nuclear weapons. The creation of such a regime can be started by a corresponding resolution of the UN Security Council.

(3) Expand the scale of the legal base for anticipated economic and political sanctions relative to states and private firms in violation of the nonproliferation regime. This can acquire significance, for example, in connection with possible noncompliance—including even collective and regional instances—with the Chemical Weapons Convention, which was signed in January 1993.

The world has reached an understanding of the need for strict measures against violations of the nonproliferation regime.

Together with this, two things should be underscored: the introduction of sanctions should be implemented only by decision of the UN, and the responsibility for breaches of the nonproliferation regime should be borne not only by the buyer but also the seller.

Nonproliferation of Missiles and Missile Technology

One of the priority directions in the sphere of nonproliferation, besides the nuclear aspect, is the attempt to deter the spread of ballistic and cruise missiles and missile technology.

According to experts, by the year 2000, up to 25 states in the world may acquire technologies to create military missiles. These are primarily systems based on the Scud missile (with a range of 300 km), but in principle we cannot exclude the creation of systems with ranges up to 3,000–3,500 km. The greatest threats emanate from countries with unstable or fundamentalist regimes.

As is well known, seven Western countries in 1987 introduced the Missile Technology Control Regime (MTCR) with the aim of preventing the creation of new effective WMD delivery systems.

The MTCR played a definite positive role in the nonproliferation of missile weapons; in particular, it became apparent in stopping such large-scale projects as the development of the medium range missile, Condor II by Argentina, with the participation of a number of Arab countries. Signatories to the regime took decisive steps in adapting the provisions of the MTCR to the current trends in the sphere of proliferation of missile weapons.

At the same time, the absence in the MTCR of a mechanism for multilateral control and the potential for many interpretations of its separate provisions frequently have led to situations where its signatories in practice have followed in many cases, political or economic considerations and not the juridical provisions of the regime.

The MTCR, as it exists now, could be improved by giving its provisions greater clarity and by organizing an active system of multilateral control over exports of missile technologies. Besides this, the MTCR should not serve as an obstacle to cooperation between countries in the sphere of peaceful uses of space.

At a broader level, the problem connected with the threat of ballistic missile proliferation could be more effectively resolved through active cooperation of the leading missile-space powers in creating a new international regime to regulate activity in the sphere of missile technology exports which would have sufficiently wide scope and a global character. Participants would include both state-suppliers with a developed technology base and countries interested in acquiring access to missiles and missile technology for their peaceful uses. Control over the transfer of missiles and associated technologies could be realized within the scope of the creation of a special international organization, such as a "missile-space IAEA."

The Global Protection System

Russian recognition of the potential threat of missile and missile technology proliferation led to the announcement by President Yeltsin in January last year of his initiative for the joint development, creation, and joint operation of a Global Protection System (GPS) for the world community in place of SDI. This proposal was approved by the American side, with which, until recently, we were conducting active development of the GPS concept within the High Level Group, created for this reason in June 1992.

Let me remind you of the basic elements of the Russian GPS concept.

In our opinion, the GPS presents a complex of measures for the control of the proliferation of WMD and their delivery means; the creation, testing and military use of missile weapons; as well as restrictive measures and corresponding international legal sanctions against violators.

The basic political principle of creating GPS is its accessibility to all states. This assumes the possibility of participation by all interested countries in development, use and administration of the system. In this way, GPS would fulfill a stabilizing role, removing both the motivations for competition in the strategic arms race between offensive and defensive weapons and attempts to achieve military-strategic superiority, as well as possible suspicions concerning agreements of a narrow circle of countries, having advanced technologies, to act without consideration of the interests of other states.

The Russian GPS concept assumes the need to preserve the 1972 ABM Treaty, while maintaining the possibility of further reductions of nuclear weapons under START.

First and foremost at this stage, we count on receiving an adequate assessment of the scale and dynamics of the threat of proliferation of WMD and their delivery means. On the basis of such an assessment, specific characteristics of the systems that will make up the GPS could be defined.

The composition of GPS systems and the level of their deployment should be such that they do not raise the concerns of the nuclear states with respect to the effectiveness of their deterrent potentials and do not impel them to build them up.

The creation of the system will be carried out in stages. Initially, it would be expedient to resolve the issue of the organization of cooperation in the sphere of early warning through the creation of a joint international center of early warning of missile attack, which would provide information about testing, deployment and use of missile weapons.

Among the problems that must be resolved are the specific composition of GPS participants and the juridical form of such participation; the principles of use of national means within the structure of GPS; the procedure for the creation and functioning of multinational components (it goes without saying that these cannot circumvent the limits of the ABM Treaty); the principles of control of the system, etc.

The main task at this time is formulating a mutually acceptable GPS concept and its approval by a wide circle of states. The main thing, in our opinion, is that Russia and the U.S. have already begun joint practical work in its conception, which we view both as a realization of our strategic position on the development of partnership relations with the U.S., as well as a success in laying the foundation for subsequent negotiations, in particular, on such issues as a joint experiment in the spheres of early warning, tactical missile defense, and cooperation in the area of the exchange of associated technologies.

Two Dimensions of BMD

In concluding my paper, I would like to note that with the end of the Cold War, the problem of the possible creation of a global BMD system has two, so to speak, dimensions. The traditional view of relations between East and West (or if you prefer, now between Russia and the U.S.) has been augmented by new relations—between North and South.

If you take the traditional dimension, then it obviously has not disappeared. However, as in the years of the Cold War BMD now constitutes merely a particular case in the context of relations between Russia and the U.S., or even a manufactured case from the character of the bilateral strategic relationship.

The question is this: has the character of this relationship really changed after the end of the Cold War?

On the political level, there is no doubt that the answer is affirmative. However, there is equally no doubt (no matter how much politicians may claim) that Russia and the U.S. have ceased to be adversaries. But if the nuclear forces continue to be targeted at each other, i.e., the material infrastructure of confrontation is maintained, then these statements mean little. The material infrastructure of confrontation at any moment can give rise to confrontation in any political situation.

Facts are facts: the agreements reached on nuclear disarmament have not yet led to changes in that model of strategic relations between the two countries, which in the American literature is called a "mutual hostage relationship." The START I Treaty liquidated only the oldest weapons. The START II Treaty obviously preserves the nuclear potential of the sides for mutual deterrence.

The attempts by the Russian President to go beyond the limits of this fateful logic and propose the renunciation of targeting nuclear weapons at one another have not yet produced practical results.

Therefore the fundamental question, which needs to be answered before the issue of BMD can be discussed in the context of bilateral relations, is this: will the nuclear factor continue? that is, will nuclear weapons remain the basis of strategic stability between Russia and the U.S.?

It must be remembered that strengthening stability—whether strategic or geopolitical—is, first and foremost, a political, and not a military-technical decision. In the final analysis, equipping the armed forces with nuclear weapons is the result of political decisions. The same has always been true with regards to the possibility of creating and deploying a global BMD system.

As regards the other dimension of this issue (North-South), it remains to be studied. A whole series of questions here demands clear answers. We must search for answers together, above all in the context of resolving the tasks of nonproliferation.

In this connection, attention should be drawn to the idea of the creation of an international organization which would include both states with developed scientific-technical potential as well as those interested in obtaining access to participation in creating a national base for space research. This would permit the modernization of the international nonproliferation regime in a manner consistent with significant weakening of suspicion that is aimed at strengthening the monopoly on the use of results of scientific-technical progress by the developed states.

Simultaneously, of course, we must work out a list of norms and rules of conduct for participants in this international organization.

An effective, practical tool for preventing the proliferation of WMD could be the creation and use of the global system of "early warning" resting on scientifically based criteria. Such a system would be intended for formulating objective assessments of the extent of the existing threat of proliferation of WMD and their delivery means by countries. The global system of threat assessment could be significantly strengthened and reduce the costs of such a multibillion dollar project as a system of global protection against ballistic missiles.

Many states have already created their own centers of this type, with an important role being played by the intelligence services, which are now being reoriented to an increasing extent to the complex problem of countering the proliferation of WMD.

An international mechanism for control and surveillance should possess the ability to realistically reach conclusions about the actions of states possessing WMD or developing technologies and production bases for their manufacture, and also about the plans of countries which are potentially interested in obtaining access to them. To an equal degree, this should apply to states which have an existing missile production capability or want to possess missile technologies, including for space research.

In terms of creating such an international mechanism, several already functioning organizations, for example, the World Space Organization, can play a role. They are fully capable within their structures of carrying out, in particular, verification of the responsibilities of states in the sphere of preventing the diversion of acquired missiles, their components and associated technologies for peaceful uses to purely military, or "dual uses."

Here a constructive role should be played by the UN. Under international auspices, for example, the UN could establish a data bank where information would be accumulated on questions of nonproliferation. A parallel data bank could be filled with data from "contiguous" sectors focused on trade in weapons and military technologies. The results of analyses by experts from both the UN and other levels of investigation also could be stored there.

The possibility of creating an International Control Agency with the function of coordinating observance of agreements both of disarmament in general and nonproliferation should not be excluded. Existing possibly as part of the Permanent UN Secretariat (or as an autonomous organizational unit), the International Control Agency on the basis of special agreements concluded with the UN, IAEA and other interested organizations (including a corresponding subset of the intelligence services of the member countries of the Agency), could fulfill control functions. The exposure of possible violators of international regimes would be accompanied by, perhaps, the suppression of further illegal activities, up to resorting to the use of economic sanctions or other enforcement procedures.

Traditional Notions of Deterrence: Stability in a Multipolar, Proliferated Environment

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The end of the Cold War necessitates a fundamental re-examination of the concept of stability. Stability has been a useful planning tool for sizing forces and evaluating options in the last few decades, although it is not clear that it has been as useful in determining the likelihood of war or the use of force. It is important to remember this inadequacy as we go into the post-Cold War period. The new international environment differs markedly from the bipolar confrontation of the last four decades. While the previous emphasis on the "stability of deterrence" might not be abandoned entirely, the future will certainly require a much broader perspective. There are likely to be many international tensions with military, economic, and social dimensions.

The objective of this article is to outline a planning scheme on how to discuss multilateral force size and regulation. The necessary condition is a simple, completely understood metric that all can embrace as "good enough for planning." I propose stability as that measure, although it is not, and has never been, a tool for predicting the probability of war.

The planning framework comprises a set of necessary conditions that must be satisfied before war is initiated. That is, before war can be waged, armies must be raised and trained, weapons developed and built, civilians mobilized and motivated. Only 10% of the wars fought since Napoleon have been quickly and decisively lost by nations that planned, prepared for and attacked first, a point which provides impetus for this discussion.

The fracturing of the bipolar environment has regionalized many issues. The spread of weapons of mass destruction (WMD), the means for their delivery, and associated technologies is likely to continue or accelerate. Nationalism, ethnicity, and fundamentalism are demonstrating increasingly violent manifestations. The demise of the Soviet Union and the Warsaw Pact have left a power vacuum in East and Central Europe. Previous patrons of the superpowers have been unable to cope with the demands of modernization. This paper starts with a brief review of the previous contributions of stability theory, assesses the current state of the art, and offers a few observations on extensions that might be useful for future developments.

The author would like to acknowledge extensive stimulating comments and discussions of these subjects with Dr. M. Best, Dr. K. Payne, Dr. S. Hill, Prof. J. Bracken, Dr. A. Piontkowsky, Prof. E. Teller, Dr. R. Garwin, Prof. T. Lee, Prof. A. Zichichi, Lt. Gen. (Ret.) G. Kent.

Background

The Cold War focused our thinking on how to make nuclear deterrence in the U.S.-Soviet relationship more stable. Deterrence was the objective; stability supported it. Gradually, stability itself became the objective. With the end of the Cold War, this view of stability became too confining. It threatened to lock us into a dangerous bilateral relationship and modes of thinking, and offered no guidance for emerging problems. We will certainly wish to continue to deter some actions by others in the future. However, we cannot always meet the conditions for deterrence; even if we do, we cannot be certain that traditional ideas will work in these altered situations.

In the future, our objectives will have to be attained through a variety of approaches, including prevention, de-escalation, deterrence, preemption, counteraction, and resolution. We will need to avail ourselves of all of the tools of non-adversarial and adversarial interaction, including diplomatic influence, information, economic, and legal, military instruments. That has led to significant broadening of the scope of stability analyses and the range of its applications.

Geopolitical Stability

For this new order we propose emphasizing geopolitical stability, which represents a state of relation among nations that is generally consistent with and conducive to peaceful change and progress. It implicitly permits some non-peaceful, military behavior that is aimed at long-term stability. We will measure the success of our efforts to achieve stability through the extent to which citizens of nations are free from attack, the strength of treaty and collective security arrangements, the extent to which a hostile power can dominate regions critical to others, the level of economic interdependence in international system, and the strength of historic and cultural ties. The changed international environment introduces new, diverse, and difficult elements, which new models of stability must reflect.

Environment

In principle, there are a number of requirements for deterrence to work, among which the key assumptions are that rational leadership is involved, interaction and communication among the parties is sufficient for mutual understanding of the consequences of actions; threatened sanctions are considered credible (whether they "are" or "are not" credible is in the eye of the beholder—"truth" is that perception, nothing else) and dominate cost-benefit calculations. The fracture of the bipolar international system, regionalization of issues, and emergence of new national and sub-national groups with other characteristics will require more attention to the metrics within which rational behavior is to be understood and predicted. The key is how "rational" is determined/shaped by numerous factors. There is no single "rational" frame of reference. Our problem is to understand what is considered rational in the context.

Rationality does not mean that opponents share the same value structure; opponents may be rational on their own terms, although the underlying values on which they base their preferences may be unfamiliar, which could make them appear "irrational" to others. The fact is that national leaders do go through a planning process. Even Saddam Hussein did. The point of agreement is that after all the planning and assessment is done, even under pressure, a national leader can, for whatever reasons, attack anyway. A dictator is more likely to do it than a democracy—a dictator can just shoot the messenger.

War decision making is dominated by a single, strong leader (not necessarily the head of state). This leader may not be successful in mobilizing to strike, but he is usually successful in blocking an attempt to strike if he believes it is not in the state's best interest. The necessary planning factors must be met first. The issue is the process that leads to the choice of actions. The goal is to understand the process and factors that determine the actions of the leaders of groups that could pose threats in the future. These considerations can involve the territorial integrity, population protection, economic security, and the preservation and enhancement of reputations of leaders and regimes. Territorial size and location on the globe with respect to enemies, partners, and global powers can be factors (as can religion, cultural factors, individual psychological characteristics, etc.).

Possible measures of stability include the extent to which a nation is subject to external threats, the strength of treaty and collective security commitments, the degree of freedom from external domination, the level of economic interdependence, and the strength of historic and cultural ties. New unknowns and unknowables will stress traditional assumptions, require new frames of reference for rationality, and broaden the scenarios addressed and models used in assessing this broader definition of stability. Stability will increasingly be defined through the security of individuals. An individual is secure when there is no threat to his life, health, basic needs, or human dignity. In this definition, security and stability have new political, military, economic, psychological, ecological, and other dimensions. Satisfaction of all of these dimensions is required for geopolitical stability.

The Erice Stability Project has dealt primarily with the military dimensions of stability as inputs to political and geopolitical stability, although economic, psychological, and ecological factors are included as appropriate and quantifiable. Within that framework, potential conflicts address nuclear stability, conventional stability, and regional, civil, and local conflicts. The driving force of the research is the realization that the end of the Cold War, dismantling of the Soviet Union, and breakdown of the bipolar world order have led not only to new opportunities, but also to new serious dangers. The collapse of the traditional concepts of European and global security and stability based on this bipolar framework has created a conceptual vacuum. Many failures of the world community in dealing with current crises are due not only to mistakes of world leaders, but to a lack of an adequate conceptual framework.

Research has concentrated on two main areas: strategic nuclear stability and a dynamic conception of geopolitical stability. The former was treated in several presentations at the 1993 Erice Seminars. E. Velikhov presented a Russian perspective of an appropriate framework for cooperation with U.S. scientists and policy analysts and makers on stability. Stephen Hill broadened these discussions to embrace the broader concept of geopolitical stability. Mel Best outlined proposed operational definitions of

stability. Andrei Piontkovsky and A. Skorokhodov mapped out a stable transition from the current concept of deterrence through the threat of mutual annihilation to the possibility of cooperative stabilization through global protective systems. This work was stated within the context of the old stability analyses, but captured a new element involving the differing perceptions of the two opponents that is parallel to the concerns of political scientists. This author showed how to realign the previous metrics to reflect this change in cooperation. J. Bracken and Mel Best studied how to extend these concepts of stability into a multipolar world. V. Kukhar stressed the strains that stability considerations are imposing on current relationships between the Former Soviet Republics (FSR). R. Khairov discussed their impact on political and social instabilities inside the Russian FSR.

Ballistic Missile Defense

The discussion in "Stability and Ballistic Missile Defense" of how defenses impact stability is a fundamental advance in the subject. This section just highlights a few points that are important here, but relegated to footnotes there. The first is that Russian stability analysts recognize the volatility of perceptions, and hence insist on "worse-casing" our possible intentions. This point took us several years of dedicated and painful discussion at Erice to learn.

The second is that discussions and criticisms of rational leadership are very compelling, but it seems unlikely that all leaders run their countries by flipping coins. It would seem useful to give an integrating assessment indicating how political scientists think leaders actually use quantitative factors. I made a rough effort to do so in the "stability as a product of political and quantitative indices" section of the "Comments" on Piontkovsky's piece last year.

There are a number of areas in which it could be very fruitful to try to relate the qualitative ways political scientists think to the quantitative way analysts think. For instance, it is true that small defenses don't affect U.S.-Russia stability considerations, but defenses that look small compared to that balance look very large to someone with a few weapons and missiles. That scaling result could be, but hasn't been, quantified readily within the existing framework. It is time to resume our discussion of air and cruise missile defenses, in which the Russians are still interested. That could lead to cooperation on other modes of defense. As missile defenses are implemented, hostility is likely to be re-channeled into parallel areas.

The current North Korea versus U.S. and Japan configuration could be quantified within the current framework. Current efforts are rather static and bloodless. They do the mapping of the traditional strategic exchange concepts properly, but miss their connection to conventional balances, economic factors, and political rivalries, which could be included somehow. Placing missile defenses in theaters is stabilizing. That is a nice point. It is related to the notion of forward basing theater nuclear forces, although we always found the benefits of forward basing of offensive forces to be existential. "Defenses don't carry baggage" needs to be expanded.

A key feature of defenses is their ability to dampen the incentives for the development of offenses. However, powerful new positive ideas have become confused

by being tied to discussions of accidental or unauthorized launches, which everyone has come to think of as immune to rational incentives. The real point is simply that defenses incite dismantlement. This notion of removing the incentives for missiles seems pivotal to me, in that it shows the interaction between missiles and WMD, defenses, and other elements of geopolitical stability. This is a good example of the cross-coupling of the previous paragraph. It is real and deserves to be discussed in detail as the most obvious example of that coupling.

The most pressing issue in missile defense just now is allies. The U.S. is planning to contribute internationally by loaning its high-tech elements to coalition partners. If we cannot address this problem, no one can afford to form such coalitions with us, and we are out of international influence. A decision to preempt is actually a proof that stability considerations can indicate instability and lead to action.

The benefits of joint defenses really need to be expanded. I have believed ever since 1988 that they were feasible and desirable. Early warning is a good start, but it has growth potential that should be discussed in more detail. This point is very important to the FSRs, who for the first time are really starting to believe that shifting to a defense dominant interaction really is stabilizing. The Russians in general, and Velikhov in particular, put a lot of emphasis on this transition, and the "chaos" that can emerge. Their points are related to arguments about non-quantitative factors. I don't claim that stability analyses are the answer to this problem. They are just a single, static tool that might be useful in recognizing some transient stable points.

Conclusions

These results indicate for the first time a strong convergence to agreement on the stability of further offensive force reductions, the introduction of global defenses, and the stable extension of these concepts to a multipolar world, including to prioritize the broadening need to move from a narrow military definition of stability to the broader geopolitical stability need in the coming decades. The interrelationships between these concepts are indicated in the attached figure, which indicate how geopolitical stability impacts international relationships, and how in turn crisis and strategic stability feed into and complement the political evaluations that comprise an overall geopolitical assessment.

The figure also indicates the role of work on improved and multipolar metrics in better adapting this framework to the emerging order. This body of work indicates how to transition stably from the current weapon-rich environment to nuclear equilibrium in the vicinity of zero weapons, and the issues that must be resolved before that transition can be made safely. This part of the research program is more than half completed.

Future Tasks

Work on including this preliminary work on metrics to definitions of multipolar stability in a dynamic world is only beginning. During periods of radical, dynamic, geopolitical changes with their own irreversible internal logic, we must look for dynamic concepts of stability, which should not view stability as sustaining the status quo, but as ensuring the

smooth and peaceful transition through the inevitably dangerous and radical transitions and bifurcations required. For such a model, we must look at factors that probably have been important for stability of deterrence, but have largely been ignored for decades, such as politics, economics, communications, cultural differences, and religion.

First-strike stability concepts will continue to be important. Deterrence may weaken due to changes in offensive and defensive forces and to proliferation. Incentives to preempt must always be emphasized in evaluations of force structures and force postures in a multipolar world. References to the central nature of first-strike stability are in the Missile Defense Act of 1991 and in the paper of Representative (now Secretary of Defense) Les Aspin on proliferation.

Political thought is now far behind these events, which resemble chaotic structures far from points of equilibrium. Politics, philosophy, and mathematics will all be needed to study these new dynamic concepts of stability. Progress is contingent on fundamental advances in the quantification of geopolitical factors that were previously treated as beyond the scope of analysis. Thus, the first part of the research program is well begun and almost sure of success. The second part is risky but urgent and imperative.

This bold and innovative program calls for the integration of military, strategic, economic, political, and social issues that have previously been treated only in accidentally or carefully compartmentalized discussions in the past. Such treatments have tended to diverge into sterile discussions of the independent development of events in these different categories or glossy treatments of their interaction that have no predictive capability of interest to leaders. However, developments in military, computer, communication, and simulations technology are now proceeding at a pace—driven by the imperatives of the new world order—that it should be possible in the near future to treat these parallel developments in an integrated fashion by using modern decision analysis tools to integrate efforts of teams of experts in each of these areas.

Such developments are emerging from simulations of military engagements and weapons performance. What is needed is an extension of the scope of such simulations to incorporate new insights into how to produce and dispel the "fog of war." If successful, such techniques could evolve from mere off-line simulations into the real-time decision aids needed to help future leaders face dynamic challenges. The next step appears to be producing a framework that the international community can accept as a multilateral planning metric for future force posture decisions or disarmament discussions.

These are vital issues that deserve and require our best efforts. Great, combined efforts will be required to reverse patterns of conflict that have been build up over many generations. We have to trust one another. In order to do that, we must first understand one another. Stability analysis and its extensions have the potential to advance that process, if done carefully and jointly. There is a window of opportunity for doing so—although it may be measured in months.

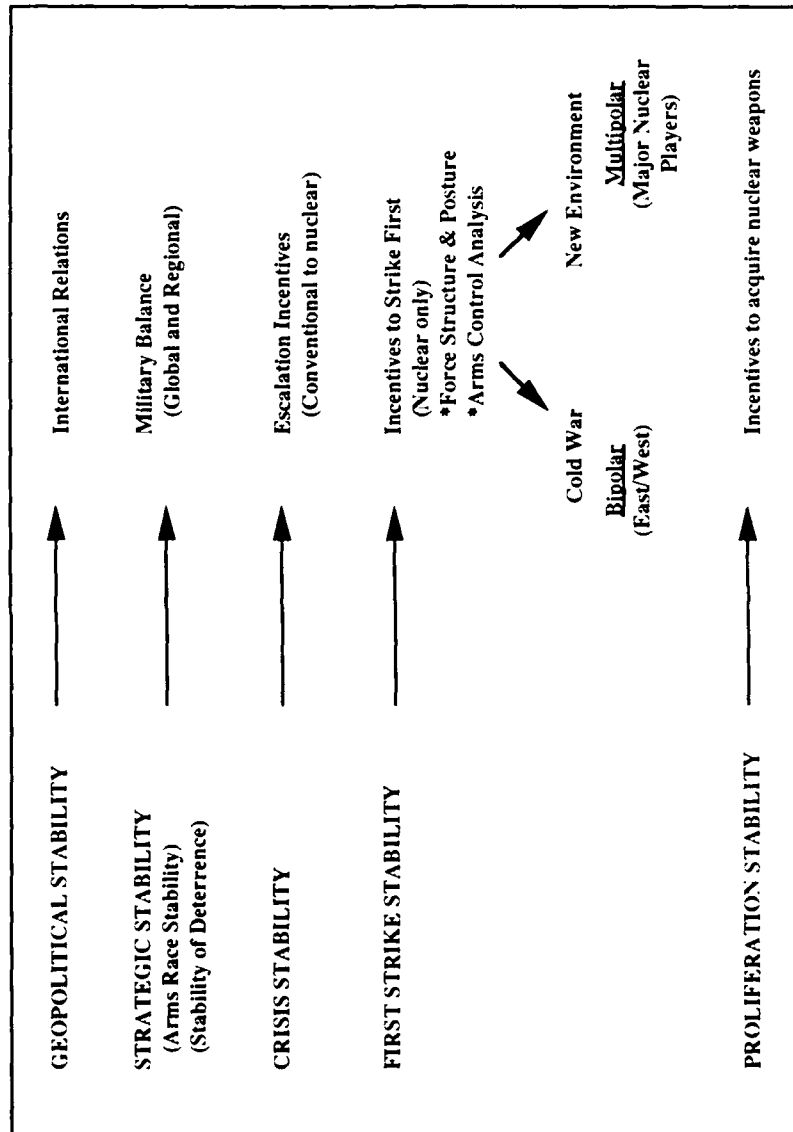


Figure 1. Stability Framework

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Book Reviews

Blank, Stephen J., and Jacob W. Kipp, eds., *The Soviet Military and the Future* (Westport, CT: Greenwood Press, 1992), 319 pp.

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The editors of this new book—Stephen J. Blank, Associate Professor at the Strategic Studies Institute of the U.S. Army War College and Jacob W. Kipp, Senior Analyst at the Foreign Military Studies Office of the U.S. Army Command and General Staff College—have produced a most useful and thought-provoking investigation of the factors influencing the transformation (*perestroika*) of the Soviet military by bringing together a series of well-documented, authoritative articles by knowledgeable scholars in the field of Soviet and Russian military studies. Although most articles were written before the dissolution of the Soviet Union in December 1991, the validity of the authors' documentation and analysis remains unchallenged by subsequent events such as the creation of the Commonwealth of Independent States, the building of national armies in the Newly Independent States, or especially the formation of the Russian National Army in March 1992. As contributor David R. Jones so clearly emphasized using Mikhail Frunze's works, "The Great Russian nationality has constituted and will constitute the nucleus of the army and the basis of all its strength" (pp. 272–273).

The contributors to this book, each in their own way, some explicitly and other implicitly, reinforce the conceptual continuity of Russia military thought that has existed, and will continue to exist, between the Tsarist Imperial Army, the Workers' and Peasants' Red Army of a "new type," the post-World War II Soviet Army, and the future Russian Army. That continuity is, in Marxian terms, "historically and objectively determined" by the enduring geo-strategic position of Russia astride the Eurasian "heartland;" the diversity of ethnic and national groups, often located in border regions; the unchanging Russian central government requirement to provide some semblance of internal social, political and economic control and order within its territory; the need to defend the borders of the former Soviet Union/Russian Empire, and certainly the Russian homeland, from external threats; and the domination of the "brain of the army"—the General Staff—by Great Russians. Just because Russian President Boris Yeltsin was democratically elected, has introduced radical, market-oriented economic reforms, and has numerically reduced the size of the Russian Army and the quantity of weapons currently being produced, these "determinants" do not disappear; nor does the sacred responsibility of the Russian Army leadership and the General Staff to defend the *Rodina* from internal and

external security threats—however dramatically altered they presently are by what Aleksandr Svechin described in his landmark 1927 book *Strategiia* as "the new strategic landscape."

John Erickson, Professor Emeritus of Defence Studies, University of Edinburgh, eloquently, and provocatively, examines the Russian General Staff basic premises for "future war" (*budushchaia voina/vozmozhnaia voina*) in his article "Quo Vadis: The Changing Faces of Soviet/Russian Forces and Now Russia." Erickson documents what the Russian General Staff perceives to be an "offensive-defensive convergence" on a global scale that will cause command of space (*gospodstvo v kosmosé*) and future war to become "virtually coterminous" (pp. 34–35). Erickson explains in detail how, and why, this Russian military "restructuring" for 21st century advanced technology combat is quite different from the internal force structure "reorganization" currently under way. The critical difference between these two intricate and immensely complicated military concepts is not one of "ivory tower academic semantics." *The Soviet Military and the Future* is well worth acquiring for a personal library, if only to reach—and read again—John Erickson's penetrating analysis about the international security implications of a numerically smaller, but modernized "professional" Russian Army employing the very latest advanced technologies to create a global defensive/offensive system in space. In light of Boris Yeltsin's January 1992 proposal to create a "Global Protection System" (GPS) by deploying a space-based anti-ballistic missile system and the International Conference on GPS hosted in Moscow in November, the accuracy of Professor Erickson's analysis from two year ago takes on even greater relevance in 1993—and beyond.

The Soviet Military and the Future encompasses much more "food for thought." Mary C. Fitzgerald of the Hudson Institute explains why the Russian Army has to be structured "in accordance with the nature of future war" 9p. 59; why "the control factor becomes determining" as distinctions between offensive and defensive weapons systems blur (pp. 62 and 74); and how the U.S. and Russian concepts of weapons in space differ (p. 68). She poses the penultimate question: "Can the emerging new Russian military doctrine be "defensive" given offense-defense convergence?" Michael Checinski of the U.S. Army Russian Institute, Garmisch, Germany provides some truly startling statistics describing the persuasiveness of the Russian military-industrial complex (p. 101) and explains why the "defense conversion" program not only is having such a difficult time getting started, but is resulting in *expanded* military control of the Russian civilian economy. He raises the salient question about the real purpose of defense conversion, since the General Staff and defense industry understandings of the term "conversion" mean "modernization"—not at all the Western concept "to change from producing primarily weapons to civilian consumer goods" Jacob Kipp has written an excellent article that describes the "centrality of the military" to Russian society; places the Russian military policy debate in a sound context as both a multi-sided internal military debate and a military-civilian debate, each "with conflicting views of the future" (p. 118); and introduces to Western readers the important Soviet/Russian General Staff "Theory of Combat Systems" concept that they have developed to "identify law-governed trends which would shape future war" (p. 128).

In sum, the authors of *The Soviet Military and the Future* offer an enormous amount of well-documented facts and critical analysis that clearly outlines a most intricate

general trend in Russia military "future war" thinking and reinforces the sagacious adage concerning all matters Soviet or Russian—"Appearances are never reality."

Grechko, A.A., and N.V. Ogarkov, eds., *The Soviet Military Encyclopedia: Abridged English-Language Edition* (edited and translated by William C. Green and W. Robert Reeves) 4 vols., (Boulder, CO: Westview Press, 1993), 1437 pp.

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William Green, Robert Reeves, and Westview Press are to be congratulated for their ambition and persistence in undertaking the enormous task of translating into English, editing and publishing in an abridged three volumes (plus a one-volume index) the massive Russian-language *Sovetskaia Voennaia Entsiklopedia*. The encyclopedia was prepared under the direction and supervision of the Marshals of the Soviet Union A.A. Grechko and N.V. Ogarkov and published in an eight-volume set by *Voenizdat* between 1976 and 1980. While Russian military scholars will prefer the original Russian-language edition for research purposes because of its completeness, accuracy, and the precise Russian conceptual meanings, this abridged English-language version will be almost useful means for the Russian scholar and general interest reader to gain an abbreviated understanding of the content, expanse, and great historical richness of Russian and Soviet military thought. The editors themselves admit there are omissions in their abridged version that mainly were the result of conscious decisions not to attempt to translate the entire Russian-language edition; however, these omissions alone do not diminish the important of their contribution toward the furthering of general Western knowledge about the Russian military system.

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1. Robert W. Taylor and Harry F. Vander, "Defining Terrorism in El Salvador," *Annals of the American Academy of Political and Social Science*, vol. 483 (September 1982), 167.

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2. C. Wright Mills, *The Power Elite* (New York: Oxford University Press, 1956), p. 174.

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